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Arizona Corporation Commission
DOCKETED

Monica Luckritz
Manager-Policy and Law

OCT 11 2000

DOCKETED BY

October 11, 2000

Mr. Jerry L. Rudibaugh
Chief Hearing Officer
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Re: Docket No. T-00000A-00-0194

Dear Mr. Rudibaugh:

Pursuant to the procedural order dated August 21, 2000 for Phase II in the above referenced docket, enclosed please find one original and ten copies of Qwest's direct testimony for the following witnesses:

Renee Albershiem
Larry Brotherson
William Fitzsimmons
Marti Gude
Perry Hooks
Robert J. Hubbard
Robert Kennedy
Teresa Million
Dr. William Taylor

Please let me know if you have any questions.

Sincerely,

Monica Luckritz

Enclosures

BEFORE THE ARIZONA CORPORATION COMMISSION

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CARL J. KUNASEK
CHAIRMAN
JIM IRVIN
COMMISSIONER
WILLIAM A. MUNDELL
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	**DOCKET NO. T-00000A-00-0194**

DIRECT TESTIMONY OF

RENÉE ALBERSHEIM

QWEST CORPORATION

October 11, 2000

TESTIMONY INDEX

EXECUTIVE SUMMARY

1. Current Responsibilities:

   Currently, my responsibilities include identifying and managing regulatory issues involving Qwest's operational support systems (OSS) as a result of the Telecommunications Act of 1996, FCC orders, state commission decisions, and other legal and regulatory matters.

2. Purpose of Testimony:

   The purpose of this testimony and exhibits is to discuss the costs incurred and the modifications that Qwest has performed to provide CLECs with access to Qwest's operational support systems (OSS) so that CLECs may perform all necessary functions associated with line sharing.

3. Summary of Testimony:

   In my testimony, I will provide: 1) background information regarding Qwest's OSS and electronic interfaces; 2) a description of what has been ordered relating to line sharing and OSS; 3) a description of the actual modifications to OSS that are needed to support line sharing; and 4) an explanation of the costs Qwest has incurred to make those modifications.

I. IDENTIFICATION OF WITNESS

Q. PLEASE STATE YOUR NAME, OCCUPATION, AND BUSINESS ADDRESS.

A. My name is Renée Albersheim. I am employed by Qwest Corporation (Qwest) as a Regulatory Manager in the Information Technologies Long Distance Entry & Wholesale Organization. My business address is 1999 Broadway, 10th Floor, Denver, Colorado 80202.

Q. PLEASE DESCRIBE YOUR WORK EXPERIENCE AND EDUCATION.

A. I received a Bachelor of Arts Degree from the University of Colorado in 1983, and a Master of Business Administration in Information Systems from the University of Colorado Graduate School of Business in 1985. Prior to becoming a Qwest employee, I was a consultant in application development projects for 15 years in a variety of roles: programming and systems development, systems architecture, project management, information center management, and software training. During that time I worked on a number of Qwest's Operational Support Systems. I am currently attending the University of Denver College of Law, and will receive my Juris Doctor in May 2001. Since joining Qwest, I have worked in the Long Distance Entry & Wholesale Organization in the Information Technologies division.

II. OPERATIONAL SUPPORT SYSTEMS BACKGROUND

Q. WHAT ARE OPERATIONAL SUPPORT SYSTEMS (OSS)?

A. Qwest uses a variety of computer systems to support the operations of its telecommunications business. To understand and evaluate the OSS issues relating to line sharing, it is necessary to provide an overview of the functions that operational support systems perform. An operational support system is a computer system that does not directly provide telecommunications service to customers, but supports employees performing "operational" duties, such as issuing service orders, testing trunks and maintaining switching systems. These operational support systems are specialized; each performs different functions. Certain operational support systems allow for the ordering of products and services for customers, and other OSS record and process trouble tickets. There are many other operational support systems that provide a wide variety of other functions.

Q. WHAT PURPOSES DO OPERATIONAL SUPPORT SYSTEMS SERVE IN CONNECTION WITH CLEC ORDERS FOR LINE SHARING?

A. OSS are important to the ability of competitive local exchange carriers (CLECs) to obtain line sharing from Qwest and other incumbent local exchange carriers (ILECs). Most important, OSS are used to process orders that CLECs submit for line sharing. CLECs typically submit these orders in the form of local service requests (LSRs) that enter Qwest's OSS, are converted into service orders, and are processed through downstream systems. The downstream systems use the information on the service orders to perform the provisioning, billing and repair functions needed to support line sharing.

Q. WHAT IS MEANT BY OPERATIONAL SUPPORT SYSTEMS ELECTRONIC INTERFACES?

A. Electronic interfaces facilitate the exchange of information between the OSS of a CLEC and those of Qwest. An interface allows a CLEC to submit pre-order and order transactions to Qwest electronically. The interface also permits the electronic exchange of other information between CLECs and Qwest, including information about products and services, installation timelines, the characteristics of facilities, and the completion of orders. There are two primary methods for exchanging this type of information - batch transfers and real-time transactions. An electronic interface that uses a batch transfer method processes large amounts of information and transmits the information from one computer system to another. This type of data processing accumulates large amounts of information, groups related transactions together, and transmits them on a scheduled basis, generally once a day. Batch transfers enable a large amount of information to be transmitted efficiently between computers. For example, although switches can record call detail messages as they are made, Qwest's Customer Record Information System (CRIS) Billing System processes the call details on a scheduled daily basis.

An electronic interface that uses a real-time transfer method, on the other hand, processes data and/or transactions in an interactive mode, similar to a conversation. A transaction or query is sent from one computer system to another and a response is sent back without waiting for a scheduled transfer time. For example, if a CLEC's computer system submits a request for information about the availability and characteristics of an unbundled loop, Qwest's OSS will receive the request through the interface, conduct a query of its databases, and transmit the responsive information back to the CLEC's computer system. Unlike batch transmissions, real-time transactions are executed in direct response to a request. These transactions are real-time in the sense that the time needed to handle a specific request is the only time that elapses between receipt of a request and sending a response. Qwest's computer system answers the CLEC's computer as soon as it has the information the CLEC requested. Generally, an electronic interface that uses a real-time electronic transfer method is necessary whenever the information requested is needed to influence the next step of an ongoing process.

Q. WHAT ELECTRONIC INTERFACES DOES QWEST PROVIDE?

A. Qwest offers two real-time electronic interfaces for the exchange of information relating to pre-ordering, ordering, and provisioning of resale services and unbundled network elements. Qwest built and offers a human-to-computer electronic interface, IMA-GUI (Interconnect Mediated Access – Graphical User Interface), and a computer-to-computer electronic interface, IMA-EDI (Electronic Data Interchange), for pre-ordering, ordering, and provisioning of resale and line-side unbundled network elements (UNEs). For repair capabilities, Qwest also offers two types of real-time electronic interfaces to CLECs. IMA-GUI provides repair functionality through a human-to-computer electronic interface, while EB/TA (Electronic Bonding/Trouble Administration) provides those capabilities through a computer-to-computer electronic interface. Each of these interfaces allows the CLEC to submit pre-order, order, and repair transactions electronically and allows Qwest to send confirmation information back to the CLEC electronically. For descriptions of the aforementioned electronic interfaces, please see Exhibit RA-1 – System Descriptions of IMA-EDI, IMA-GUI and EB/TA.

Q. HOW DO CLECS INFORM QWEST THAT THEY WISH TO ORDER A LINE SHARING ARRANGEMENT WITH AN END-USER?

A. CLECs inform Qwest that they wish to order a line sharing arrangement with an end-user by issuing a local service request (LSRs) for line sharing to Qwest.

Q. WHAT IS AN LSR?

A. An LSR is a local service request that CLECs use to order products and services from Qwest.

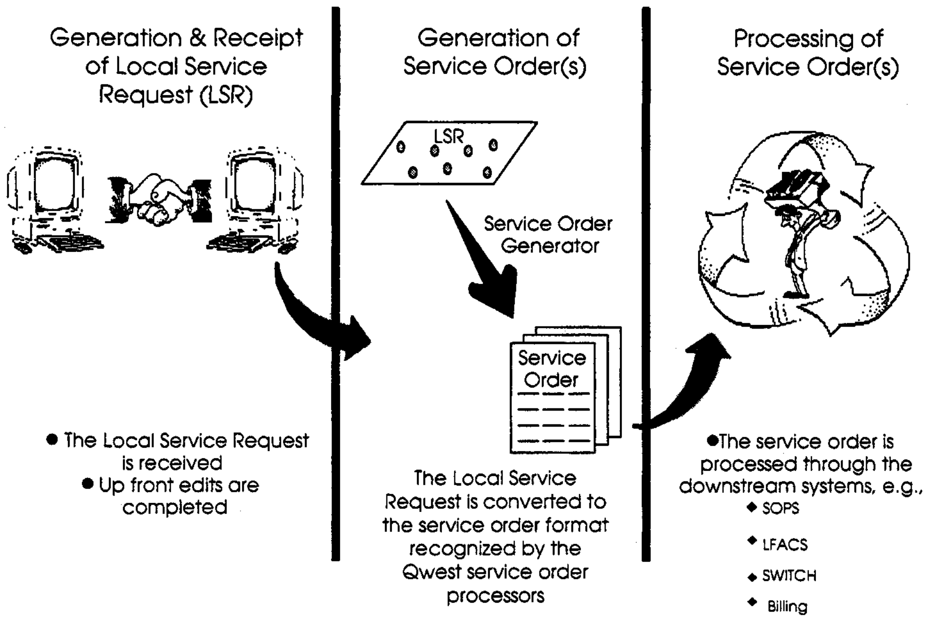
Q. PLEASE DESCRIBE THE TYPES OF INFORMATION THAT QWEST AND CLECS ARE LIKELY TO EXCHANGE THROUGH AN LSR TO FACILITATE LINE SHARING.

A. In addition to the general information that CLECs must provide when they send an LSR for line sharing, CLECs must:

- show that the order is for a shared line;
- provide information identifying the specific customer for whom line sharing is sought; and
- supply information about the appropriate meet point where the CLEC's equipment will connect with Qwest's equipment.

Q. PLEASE DESCRIBE HOW LSRS ARE PROCESSED.

A. When a CLEC submits an LSR for line sharing, Qwest must process the LSR through all of the systems necessary to deliver the service to a customer. The service ordering process is the component that takes the CLEC's LSR and converts it to the service order format required to process the request through Qwest's service order systems. The ordering process is comprised of three major functions depicted in the following picture and explained below.



1) Local Service Request Generation and Receipt. A CLEC generates an LSR in a format defined by the OBF (Ordering and Billing Forum), and transmits it to Qwest either via an electronic interface or facsimile.

2) Service Order Generation. Qwest's OSS understand information contained on service orders. Therefore, Qwest must take the information from the LSR and create one or more service orders. A service order contains product codes (USOCs - Universal Service Order Codes) and Field Identifiers (FIDs). FIDs are the additional information required to provide the specific product.

3) Service Order Processing. Service orders are processed by many downstream systems resulting in the provisioning of service, with the equipment inventoried, and customer accounts updated.

Q. ARE QWEST'S OPERATIONAL SUPPORT SYSTEMS CURRENTLY EQUIPPED TO HANDLE LSRS FOR LINE SHARING?

A. Qwest's Operational Support Systems are not completely ready to support line sharing. In order to support line sharing in a reasonable and timely manner, Qwest developed interim solutions in addition to long-term solutions. The interim line sharing solutions designed to enable Qwest to support line sharing prior to the implementation of the long-term, permanent solutions, have been delivered. The costs associated with the implementation of the interim line sharing solutions that Qwest incurred are not included in this testimony. As I explain in detail later in this testimony, Qwest, in order to implement the long-term solutions described above must make substantial modifications to its OSS to handle orders for line sharing.

The long-term solutions are identified in Exhibit RA-2 - Gap Matrix, and are described in further detail in the Section IV of this testimony. The modifications that are needed relate not only to processing LSRs, but also to providing the provisioning (assignment and inventory), repair, and billing functionality needed to support all aspects of line sharing. The majority of these long-term solution modifications are targeted for implementation by December 2000; the costs for these modifications are included in this testimony and are explained in detail in the Section V of this testimony.

III. LEGAL PRONOUNCEMENTS RELATING TO OPERATIONAL SUPPORT SYSTEMS AND LINE SHARING

Q. WHAT ARE THE REQUIREMENTS OF THE FEDERAL COMMUNICATIONS COMMISSION (FCC) REGARDING OPERATIONAL SUPPORT SYSTEMS AND ELECTRONIC INTERFACES?

A. In order to fully understand the implications of the Federal Communications Commission's (FCC's) line sharing requirements for Incumbent Local Exchange Carriers (ILECs), one must first understand what the FCC has ordered regarding operational support systems and electronic interfaces in general. The Telecommunications Act of 1996 required ILECs, such as Qwest, to unbundle network elements and provide access to these Unbundled Network Elements

(UNEs) to CLECs.[1] In its First Report and Order,[2] the FCC identified OSS as a UNE, and required Qwest to unbundle its OSS and provide electronic interfaces to support pre-ordering, ordering and provisioning, maintenance and repair, and billing for resold products and unbundled elements. In order to meet the FCC's requirements, Qwest had to change its operational support systems to support:

- a multi-vendor environment, and
- the introduction of unbundled elements and resale products which essentially are new products and services.

The Telecommunications Act[3] and the FCC[4] recognized that providing OSS access to CLECs will come at a price, and they authorized Qwest to recover the reasonable cost of making its OSS available to CLECs.

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[1] *Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56, codified at 47 U.S.C. §§ 151 et seq.* § 252(d), (*Telecommunications Act*).

[2] See *In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, CC Docket No. 96-98, and *In the Matter of Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers*, CC Docket No. 95-185, ¶ 516 (rel. Aug. 8, 1996), (*FCC First Report and Order*).

[3] *Telecommunications Act § 252(d).*

[4] The FCC most recently discussed the ILECs' authorization to recover costs in the Line Sharing Order. See *In the Matters of Deployment of Wireline Services Offering Advanced Telecommunications Capability, CC Docket No. 98-147, and Implementation of the Local Competition Provisions in the Telecommunications Act of 1996,* CC Docket No. 96-98, ¶ 144 (rel. Dec. 9, 1999), (*Line Sharing Order*).

Q. ARE THERE RELEVANT LEGAL PRONOUNCEMENTS THAT RECOGNIZE THE RELATIONSHIP BETWEEN OPERATIONAL SUPPORT SYSTEMS AND LINE SHARING?

A. Yes. In the fall of 1999, the Minnesota Public Utilities Commission (MNPUC) and the FCC issued orders that recognize this relationship and that require actions by ILECs (Qwest) and CLECs. The OSS modifications that Qwest has made and will make for line sharing are driven by these orders and the CLECs' needs for loop information and line sharing ordering.

Q. WHAT DID THE MINNESOTA PUBLIC UTILITIES COMMISSION (MNPUC) ORDER REGARDING LINE SHARING AND OPERATIONAL SUPPORT SYSTEMS?

A. On October 8, 1999, the Minnesota Public Utilities Commission (MNPUC) ordered Qwest and any interested CLECs to "work together . . . to develop the terms and conditions under which Qwest would provide line sharing to data CLECs . . .."[5] In parallel, the MNPUC also ordered Qwest and any interested CLECs to "participate in good faith in a technical trial . . . for the purpose of confirming which (if any) of the interested data CLECs' equipment does not interfere with Qwest's voice grade network."[6]

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[5] *In the Matter of a Commission Initiated Investigation into the Practices of Incumbent Local Exchange Companies Regarding Shared Line Access, Docket No. P-999/CI-99-678, at 6* (Issued October 8, 1999).

[6] *Id.*

By focusing on the "terms and conditions" relating to line sharing, the MNPUC's order clearly implicates OSS, since OSS are necessary for line sharing. Accordingly, in compliance with the MNPUC's order, Qwest has been working closely with CLECs to develop OSS that properly support line sharing.

Q. WHAT DID THE FCC CONCLUDE REGARDING LINE SHARING AND OPERATIONAL SUPPORT SYSTEMS?

A. In its Line Sharing Order, the FCC recognized that the ILECs must modify their systems to support line sharing and that the ILECs will incur costs in doing so.[7] The FCC found that the ILECs should recover "reasonable incremental costs of OSS modification that are caused by the obligation to provide line sharing as an unbundled element."[8]

Q. PLEASE DESCRIBE THE PROCESS USED BY QWEST AND THE CLECS TO MEET THE OBLIGATIONS SET FORTH BY THE MNPUC AND THE FCC.

A. First, it must be understood that Qwest was the first ILEC in the country to implement line sharing. Line sharing is a very complex unbundled network element. Unlike other UNEs that are provided to and used by a single LEC, the line sharing UNE is shared by two LECs - Qwest and the CLEC. As a result, it was essential that Qwest and the CLECs work closely together, especially in the area of OSS. This was accomplished through weekly face-to-face meetings attended by representatives of Qwest and interested CLECs. At these meetings, the joint team

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[7] *Line Sharing Order ¶ 142.*

developed high-level processes for line sharing and identified issues to be resolved related to those processes. The joint team considered the five general categories of OSS issues: 1) pre-ordering (e.g., pre-qualification of loops for ADSL compatibility); 2) ordering; 3) provisioning; 4) billing and 5) repair and maintenance. When necessary, the group relied on sub-groups to address specific issues.

Q. IS THE OPERATIONAL IMPACT REVIEW ORDERED BY THE MNPUC AND CONDUCTED BY QWEST AND CLECS RELEVANT TO PROVIDING LINE SHARING IN ARIZONA?

A. Yes. Qwest and CLECs negotiated the business and technical OSS requirements for line sharing following the Operational Impact Review in Minnesota. Qwest's OSS are deployed throughout its entire 14-state region. Therefore, the business and technical OSS requirements for line sharing that were negotiated as a result of the Operational Impact Review in Minnesota will drive the deployment of line sharing throughout Qwest's entire 14-state region.

Q. SPECIFICALLY, WHAT TASKS DID THE PARTIES PERFORM?

A. The first step was to identify business requirements. The joint team spent a great deal of time identifying the data need of the CLECs. Qwest and the participating CLECs discussed the needs for pre-ordering, ordering, provisioning, repairing, and billing functionality. The requirements that were agreed to are documented in the Operational Impact Team minutes that were submitted as part of the stipulation that

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[8] *Line Sharing Order* ¶ 144.

was entered into on November 22, 1999. The second step was to turn those business requirements into systems impacts. As shown in the attached Exhibit RA-2 - Gap Matrix, the joint team identified eight broad areas for modification of Qwest's OSS. These areas are referred to as "gaps." The joint team developed long-term solutions and deployment timeframes (when known) for each of those gaps. In those cases where the CLECs desired a more immediate solution, the parties negotiated interim solutions and timeframes.

Q. WHAT ADDITIONAL ACTIVITIES DID THE JOINT TEAM UNDERTAKE?

A. In addition to identifying the OSS impacts, the joint team defined the provisioning and repair processes. Because there is such a close nexus between the OSS impacts, the process, and the network architecture, the team also defined the network architecture. In general, the joint team determined that the CLECs would have to provide additional line sharing information that, among other things, would designate the end-user customer, and the meet points where the CLECs' equipment and Qwest's equipment will connect. The team also agreed that the POTS provisioning and repair flows would be used. To ensure that the end-user customer would not be negatively impacted, the joint team also agreed to develop a joint repair process.

Q. WERE THE PARTIES ABLE TO COME TO AN AGREEMENT ON THE OSS IMPACTS?

A. Yes. The joint team agreed that Qwest's systems could be modified to support line sharing. In addition, the joint team agreed that initial deployment would be based on a combination of automated and manual work steps, with full mechanization not occurring until delivery of the long-term solution. The joint team developed a decision point list (DPL) that was also a part of the stipulation and was used to display joint positions when the parties reached full agreement on an issue and to display divergent positions when there was either no agreement or partial agreement. The DPL shows full agreement on all of the OSS issues. In fact, Qwest agreed to provide as much functionality as possible within as short a time frame as possible. The only item that did not result in a first quarter 2000 interim solution was billing the CLECs for charges associated with line sharing. Qwest offered to delay issuing its wholesale bills for line sharing until the second quarter of 2000, instead of delaying the initial deployment.

Q. AFTER REACHING AGREEMENT WITH THE CLECS ON THE ISSUES RELATING TO OPERATIONAL SUPPORT SYSTEMS, WHAT STEPS DID QWEST TAKE TO BEGIN IMPLEMENTING THE MODIFICATIONS?

A. The extensive exchange of information between Qwest and the CLECs allowed Qwest to prepare a statement of work describing in detail the OSS modifications that are needed for line sharing. That statement of work is attached to my testimony as confidential Exhibit RA-3 - Statement of Work for Shared Loop. Qwest provided the statement to an outside contractor, Telcordia, for preparation of a plan for implementation and a cost quote. In addition, the agreements between Qwest and the CLECs on OSS modifications permitted Qwest to identify and begin planning the OSS changes that it will implement in-house.

Q. HAVE QWEST AND THE CLECS CONTINUED TO WORK TOGETHER TO DEPLOY LINE SHARING?

A. Yes. After the initial agreement was reached in Minnesota, Qwest and the CLECs began negotiating an agreement to address line sharing in the other 13 states throughout Qwest's region, including Arizona. That 13-state agreement, signed on April 24, 2000, is attached as Exhibit RA-4 - Interim Line Sharing Agreement.

IV. DESCRIPTION OF THE MODIFICATIONS NECESSARY TO SUPPORT LINE SHARING

Q. PLEASE DESCRIBE THE ELECTRONIC INTERFACES AND OPERATIONAL SUPPORT SYSTEMS THAT QWEST USES TO PROVIDE CLECS ACCESS TO PRE-ORDERING, ORDERING, AND PROVISIONING FUNCTIONS.

A. In pre-ordering, ordering, and provisioning, Qwest exchanges information with CLECs about products and services, including unbundled network elements. As described earlier, Qwest provides CLEC access to two electronic interfaces for the pre-ordering, ordering, and provisioning of resale and unbundled network elements: Interconnect Mediated Access – Graphical User Interface (IMA-GUI) and Interconnect Mediated Access – Electronic Data Interchange (IMA-EDI).

The CLECs' customer service representatives can perform real-time inquiry and selection functions and electronically transmit LSRs to Qwest for processing. For more information on the pre-order and order transactions that are supported by the electronic interfaces, please refer to the Exhibit RA-1 - System Descriptions of IMA-EDI, IMA-GUI and EB/TA.

After an LSR is submitted to Qwest, it is processed through the IMA gateway. The Service Order Processors (SOPs), and other downstream installation OSS, are critical components of the process that play a role after pre-ordering/ordering and provisioning functions, and before the later activities of maintenance and repair, and billing. While the SOPs vary somewhat by region within Qwest's 14-state territory, in each region, the SOPs are the common points through which orders pass for most product types. For Arizona, which is in the central region, the SOP is known as Service Order Processor and Distribution (SOPAD). SOPAD receives Qwest service orders from several sources and, in turn, communicates with the Service Order Activation and Control System (SOAC) that manages the service order process with respect to the specialized systems that design and activate network-based services, assign facilities, maintain central office inventory, and manage customer account information. In doing so, SOAC directs each service order through all steps necessary to complete the order and provision the service.

See Exhibit RA-5 - System Descriptions, for a brief description of the above-mentioned Qwest systems.

Q. PLEASE DESCRIBE THE MODIFICATIONS THAT MUST BE MADE TO THE PRE-ORDERING, ORDERING, AND PROVISIONING SYSTEMS TO SUPPORT LINE SHARING.

A. First, the CLECs agreed that the pre-order loop information provided by the IMA GUI/EDI 4.2 release was sufficient to begin line sharing. As a result, no pre-order modifications are necessary at this time. However, to further support line sharing, particularly in regards to CLECs' need for customer loop information, Qwest, beginning mid year 2000, has begun to provide CLECs with electronic batch files containing loop information on a per wire center basis. Those batch files contain a list of all active telephone numbers within a particular wire center as well as additional loop information for each telephone number listed. CLECs are able to access these batch loop files through a CLEC-accessible, Qwest web site. The batch files are refreshed on a rolling basis monthly. It is important to note that the batch loop files are not loop qualification files per se; they do not provide a CLEC with a definitive answer as to whether a certain loop qualifies for xDSL. Instead, the batch files provide loop information from which CLECs may make their own determination as to whether the loop is capable of supporting the type of xDSL service they are offering.

To support line sharing, the ordering and provisioning processes must be modified to reflect the fact that two local service providers (the ILEC and a CLEC) will now serve one end-user customer. The presence of two providers for one customer has a substantial impact on the OSS ordering and provisioning processes. Qwest must modify the systems that support these processes to allow the CLEC to pass additional pieces of data (new FIDs) that will be used to designate:

- the CLEC's identity;
- this is a request for line sharing;
- the line that will be shared between the requesting CLEC and Qwest;
- meet points for the service (the splitter and port location);
- the indication whether the meet points are in the central office or in the field; and
- the power density mask that the CLEC pre-specifies on the LSR.

In addition, the ordering and provisioning systems must recognize the line sharing information and, based on that information, direct data and behaviors to other downstream systems. Many of these systems must now store CLEC-specific records that correlate with the Qwest voice customer records. For example, correlation of CLEC provider records and Qwest voice customer records is necessary to carry out functions relating to billing and repair. The inventory and assignment systems must also recognize the line sharing data, be able to handle additional inventory meet points from the CLEC, and direct the inventory information to the appropriate systems.

Please see the attached Exhibit RA-6 - Descriptions of Modifications, for a complete description of the modifications needed to support line sharing and diagrams of the systems flows.

Q. PLEASE DESCRIBE THE ELECTRONIC INTERFACES AND OPERATIONAL SUPPORT SYSTEMS THAT QWEST USES TO PROVIDE CLECS ACCESS TO REPAIR FUNCTIONS.

A. To communicate with Qwest relating to issues involving repair, CLECs can use Qwest's electronic interfaces for maintenance and repair. As stated earlier, Qwest provides CLECs access to two electronic interfaces for the repair of resold services and unbundled network elements: IMA-GUI and EB/TA.

A CLEC's customer service representative can use the electronic interfaces to: 1) create trouble reports; 2) modify trouble reports; 3) receive proactive status notifications; 4) cancel trouble reports; 5) close trouble reports; 6) obtain trouble history; and 7) submit MLT (mechanized loop tests).

After a trouble report is submitted to Qwest, it must be converted into a trouble ticket. Qwest converts trouble reports into trouble tickets electronically, and the trouble tickets are recognized by LMOS (loop maintenance operations system), NSDB (network and services and database), or WFA (work force administration).

See Exhibit RA-5 - System Descriptions, for a brief description of the above-mentioned Qwest systems.

Q. PLEASE DESCRIBE THE MODIFICATIONS TO ITS REPAIR SYSTEMS THAT QWEST MUST IMPLEMENT TO SUPPORT LINE SHARING.

A. As with the changes needed for ordering and provisioning, the modifications that Qwest must implement for its repair systems are driven primarily by the fact that with line sharing, two local service providers (Qwest and a CLEC) will serve one end-user customer. As a result, there will be two line records, one for the voice portion of the line provided by Qwest and one for the data portion of the line provided by a CLEC. For repair, Qwest will remain responsible for voice service and physical line problems between the network interface device (NID) at the end-user customer premises and the point of demarcation in the central office. The CLECs will be responsible for data service problems. The voice response units that precede the repair systems must be able to "walk" the end-user customer through a series of questions and answers to determine if the repair problem can be isolated to either the voice or the data service. If it is a data service problem, there must be a "soft" referral to the CLEC.

Please see the attached Exhibit RA-6 - Descriptions of Modifications, for a complete description of the modifications needed to support line sharing and diagrams of the systems flows.

Q. PLEASE DESCRIBE THE ELECTRONIC INTERFACES AND OPERATIONAL SUPPORT SYSTEMS THAT QWEST USES TO PROVIDE CLECS ACCESS TO BILLING FUNCTIONS.

A. Qwest provides a monthly wholesale bill to a CLEC as a means of collecting wholesale charges. Depending on the products that a CLEC has ordered to offer service to its end-users, a CLEC could receive a summary bill from either the CRIS (Customer Records Information System) system or from IABS (Interexchange Access Billing System). The wholesale bill contains both usage and local service charges. For most resale and unbundled products, the billing system is CRIS. CRIS enables wholesale billing functions for resold recurring/non-recurring charges, and usage services such as intraLATA toll calls. CRIS produces the monthly bill and provides it to the CLEC using the industry-standard Electronic Data Interface (EDI) transaction set number 811. To prepare this bill for a CLEC, Qwest applies wholesale prices appropriate for the CLEC and runs CRIS bill-cycle processing. Qwest bills the CLEC at a summary account level. The bill information provided to the CLEC includes charges and account balances. Charges are broken down into categories, such as recurring charges, usage fees and taxes. As with retail bills, billing of recurring charges start and stop effective with the completion date of the related service orders.

See Exhibit RA-5 - System Descriptions, for a brief description of the above-mentioned Qwest systems.

Q. PLEASE DESCRIBE THE MODIFICATIONS TO ITS BILLING SYSTEMS THAT QWEST MUST IMPLEMENT TO ADAPT ITS BILLING SYSTEMS TO ACCOMDATE LINE SHARING.

A. Currently, the account structure in CRIS is set up to allow for one customer and one provider. However, line sharing requires CRIS to bill two customers: 1) the end-user customer for the voice portion of the line; and 2) the CLEC as the customer for the upper spectrum of the line. As a result, two customer records must be modified/created each time a line sharing order is processed. In addition, the two customer records must be correlated to ensure that subsequent order activity is performed accurately. The need to bill two customers for a single line gives rise to the need for significant modifications to Qwest's billing systems.

Please see the attached Exhibit RA-6 - Descriptions of Modifications, for a complete description of the modifications needed to support line sharing and diagrams of the systems flows.

Q. ARE THERE DOCUMENTS THAT PROVIDE DETAILED DESCRIPTIONS OF THE LINE SHARING SPECIFIC MODIFICATIONS TO QWEST'S OPERATIONAL SUPPORT SYSTEMS?

A. Yes. After Qwest and the CLECs developed the business requirements, Qwest converted the business requirements into technical requirements that systems analysts can rely upon to develop high-level designs and associated time and cost estimates for implementation. Because the descriptions of the modifications and the descriptions of the work needed to complete the modifications are very detailed, I will not attempt to provide that information in the body of this testimony. However, two exhibits to my testimony, Exhibit RA-6 - Descriptions of Modifications, and confidential Exhibit RA-3 - Statement of Work for Shared Loop, describe in full the modifications and the steps needed to implement them. Please refer to those exhibits.

Q. WHY DID QWEST SUBMIT A STATEMENT OF WORK TO TELCORDIA?

A. The majority of the systems that were impacted by the line sharing business requirements agreed to between Qwest and the CLECs are owned by Telcordia and licensed to Qwest. Accordingly, Telcordia is the appropriate party to carry out the OSS modifications that are needed to support line sharing for those systems. After Qwest submitted the statement of work to Telcordia, Telcordia produced a price for modifications to its software.

Q. DO THE CLECS BENEFIT FROM THE ENHANCEMENTS TO OPERATIONAL SUPPORT SYSTEMS YOU HAVE DESCRIBED?

A. Yes. The modifications described above and in Exhibit RA-6 - Descriptions of Modifications, are essential to Qwest's ability to support line sharing. The foundation for these modifications was established in the exchange of information and discussions between Qwest and the CLECs that occurred over a period of one and a half months. The modifications represent Qwest's response to what it learned in those discussions about the OSS needs the CLECs have.

Q. ARE THE MODIFICATIONS TO THE OSS FOR LINE SHARING SOLELY AS A RESULT OF LINE SHARING?

A. The majority of the modifications needed for line sharing would not be needed were it not for providing line sharing to CLECs. All of the internal modifications are being completed solely for line sharing. However, a small percentage of the modifications being delivered by Telcordia in the line sharing solution also support additional unbundled network elements. According to Telcordia, 15% of the Telcordia modifications are applicable to other UNEs, but 85% are solely attributable to the line sharing requirements agreed to between Qwest and the CLECs. The 85% share represents Telcordia's estimate of the percent of their total estimated costs that can be attributed solely to line sharing. This percentage is not based on the functions that Telcordia must perform. It is based on the share of the cost that Telcordia associated with work that represents system changes required for line sharing. It is important to note that the OSS modifications that Telcordia will be implementing will be deployed throughout Qwest's entire 14-state region.

V. THE COST OF THE MODIFICATIONS TO QWEST'S OPERATIONAL SUPPORT SYSTEMS

Q. WHAT LINE SHARING MODIFICATION COSTS DOES QWEST SEEK TO RECOVER IN THIS PROCEEDING?

A. Qwest is requesting cost recovery for those modifications that are solely attributable to line sharing and that, but for line sharing, would not be necessary. These costs include $870,720 for modifications to internal systems maintained by Qwest and $11,956,000 in direct expense that Qwest will incur. Telcordia's price for delivery of the long-term solution to support line sharing is $11.9 million.[9] Telcordia developed its price based on the statement of work that is attached as confidential Exhibit RA-3 - Statement of Work for Shared Loop. The direct expense that Qwest will incur also includes $56,000 for project management functions provided by another company.

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[9] The total estimate for the Telcordia solution is $14 million - 85% of that is $11.9 million.

Q. WITH RESPECT TO THE $870,720 QWEST WILL INCUR FOR IN-HOUSE OSS MODIFICATIONS, PLEASE DESCRIBE THE PROCESS QWEST USES TO DETERMINE IMPACTS TO ITS OPERATIONAL SUPPORT SYSTEMS AND DEVELOP COST ESTIMATES.

A. Qwest uses a standard systems development lifecycle process. The first step is to determine the business requirements. The business requirements are then converted into technical requirements, which are more detailed and more system-oriented. The internal technical staffs use the technical requirements to drive high-level systems designs. Using their previous experience with other projects with substantially the same magnitude, the technical staffs can take the high-level systems designs and develop a high-level estimate of the costs to develop, and deploy the modifications necessary to support the original business requirements.

VI. CONCLUSION

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

Recovery of OSS costs is allowed by the Federal Telecommunications Act of 1996.[10] In addition, in its Line Sharing Order, the FCC specifically permitted recovery of "reasonable incremental costs of OSS modification[s] that are caused by the obligation to provide line sharing as an unbundled element."[11]

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[10] *Telecommunications Act § 252(d).*

[11] *Line Sharing Order ¶ 144* (emphasis added).

Qwest has worked diligently and in good faith with the CLECs to identify their requirements for line sharing. In numerous sessions, Qwest and the CLECs worked together to define data needs, process needs, and systems needs so that the CLECs could enjoy line sharing. To provide that functionality requires extensive systems modifications. However, to accommodate the CLECs' need for market entry, Qwest identified and negotiated interim solutions that met the CLECs' timeframes. These interim solutions were based on a combination of automation and manual work steps.

Telcordia has ownership of the majority of the systems that need modification to support the long-term solution and allow for volume. The majority of the cost of implementing line sharing is a direct expense to Qwest. The only costs for which Qwest is requesting line sharing cost recovery are those that are solely attributable to line sharing, and are solely "caused by the obligation to provide line sharing as an unbundled element."[12] Therefore, Qwest is entitled to recover the OSS costs associated with line sharing.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

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[12] *Id.*

BEFORE THE ARIZONA CORPORATION COMMISSION

CARL J. KUNASEK
CHAIRMAN
JIM IRVIN
COMMISSIONER
WILLIAM A. MUNDELL
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	**DOCKET T-00000A-00-0194**

EXHIBITS OF

RENÉE ALBERSHEIM

QWEST CORPORATION

October 11, 2000

INDEX OF EXHIBITS

SYSTEM DESCRIPTIONS OF IMA-EDI, IMA-GUI AND EB/TA

Qwest provides CLEC access to two electronic interfaces for the pre-ordering, ordering, and provisioning of resale and unbundled network elements: Interconnect Mediated Access - Graphical User Interface (IMA-GUI) and Interconnect Mediated Access - Electronic Data Interchange (IMA-EDI).

Qwest provides CLECs access to two electronic interfaces for repair: IMA-GUI and Electronic Bonding and Trouble administration (EB/TA).

IMA-EDI – Interconnect Mediated Access - Electronic Data Interchange

Qwest has deployed a real-time, electronic interface called IMA-EDI. IMA-EDI gives CLECs access to the pre-ordering and ordering OSS functions through a computer-to-computer interface.

CLECs can use the same interface to send their pre-ordering and ordering transactions, which are processed by the same OSSs that provide these functions to Qwest's retail units. These transactions and their corresponding OSSs are provided in the table that begins on page 2 of this exhibit.

IMA-GUI - Interconnect Mediated Access-Graphical User Interface

Qwest has also deployed a real-time, human-to-computer, electronic interface called IMA-GUI, which allows CLECs access to each of the OSS functions necessary to support their customers' requests. IMA-GUI provides access to Qwest OSS functions through the use of a GUI. In so doing, IMA-GUI allows the CLEC's customer service representative to perform real-time inquiry and selection functions and electronically transmit LSRs to Qwest for processing.

Like IMA-EDI, CLECs can use the same interface to send their pre-ordering and ordering transactions, which are processed by the same OSSs that provide these functions to Qwest's retail units. These transactions and their corresponding OSSs are provided below:

Function	Capability Type	OSS Supporting Function
Address Validation	Pre-Ordering	PREMIS (Premises Information System)
Service Availability Query	Pre-Ordering and Ordering	SONAR (Service Order Negotiation and Retrieval System – Internal Table)
Customer Service Record	Pre-Ordering	BOSS (Billing and Order Support System)
Facility Availability Query	Pre-Ordering	LFACS (Loop Facility Assignment Control System) via Facility Check.
Telephone Number Retrieval	Pre-Ordering and Ordering	PREMIS; CNUM
Telephone Number Selection	Pre-Ordering and Ordering	PREMIS; CNUM
Appointment Scheduling Retrieval	Pre-Ordering and Ordering	Appointment Scheduler
Appointment Scheduling Selection/Reservation	Pre-Ordering and Ordering	Appointment Scheduler
Carrier List	Pre-Ordering	SONAR (Service Order Negotiation and Retrieval System – Internal Table)
Product and Service Selection	Ordering	Not Applicable[1]

[1] The following transactions do not apply to Qwest's IMA-EDI interface because the CLEC's OSSs contain the pertinent information and perform the desired functions: product and service selection, customer listing creation, billing number selection, summary information review, order storage and retrieval. In the case of pre-ordering

Function	Capability Type	OSS Supporting Function
Customer Listing Creation	Ordering	Not Applicable
Billing Number Selection	Ordering	Not Applicable
Summary Information Review	Ordering	Not Applicable
Order Storage and Retrieval	Ordering	Not Applicable
Order Submission	Ordering	IMA-GUI/IMA-EDI Architecture
Firm Order Confirmation	Ordering	IMA-GUI/IMA-EDI Architecture
Supplemental Order Submission	Ordering	IMA-GUI/IMA-EDI Architecture
Order Inquiry	Ordering	IMA-GUI/IMA-EDI Architecture
Order Completion	Ordering	IMA-GUI/IMA-EDI Architecture

EB/TA – Electronic Bonding and Trouble Administration

Qwest has deployed a real-time, computer-to-computer electronic interface called EB/TA for repair transactions. EB/TA allows the CLEC's customer service representative to make inquiries, receive proactive status notifications, and electronically transmit trouble reports to Qwest for processing. The CLECs' repair transactions can be submitted through either IMA-GUI or EB/TA and are processed by the same OSS that provide these functions to Qwest's retail units. These transactions and their corresponding OSS are provided below:

transactions, Qwest provides the data in response to the pre-ordering query for use by the CLEC when performing ordering transactions.

Function	OSS Supporting Function
Trouble Report Creation	MEDIACC (Mediated Access) – LMOS (POTS) and WFA (Designed Services or Unbundled Network Elements)
Trouble Report Modification	MEDIACC (Mediated Access) – LMOS (POTS)
Trouble Report Inquiry	MEDIACC (Mediated Access) – LMOS (POTS) and WFA (Designed Services or Unbundled Network Elements)
Active Notification of Status Change	MEDIACC (Mediated Access) – LMOS (POTS) and WFA (Designed Services or Unbundled Network Elements)
Trouble Report Cancellation	MEDIACC (Mediated Access) – LMOS (POTS) and WFA (Designed Services or Unbundled Network Elements)
Trouble Report Closure	MEDIACC (Mediated Access) – LMOS (POTS) and WFA (Designed Services or Unbundled Network Elements)
Trouble Report History	MEDIACC (Mediated Access) – LMOS (POTS) and WFA (Designed Services or Unbundled Network Elements)
MLT	MEDIACC (Mediated Access) – MLT (POTS)

Gaps	Applications Impacted	Specific Issue	Interim Solution[1]	Deployment Timeframe [1]	Long-term Solution [1]	Deployment Timeframe [1]
Gap 1: LSR Modification & transmission of service order in system	IMA	Need a mechanism to identify shared line order. (Meet point, "CFA, UCA UPR", CLEC ID, TN, ADSL indicator).	Proprietary LSR based on USW and DLEC agreement. This may be done via email, fax, or by faking IMA to use existing fields. A team of service order writers and OBF reps could accomplish this goal.	TBD	Make the long term changes through the OBF, such that, common rules sets are established	TBD
Gap 2: Order writing (between ICADS and SOP)	ICADS (creating automation).	Need business rules added to process shared-line orders, and to create SO.	No Interim Requirement	No Interim Requirement	Dependant on the standards within OBF establishing a rule set.	4Q2000
	Fetch-n-stuff and Data Arbiter	Enhancement to perform shared line facility availability queries. Later phases.	No Interim Requirement	No Interim Requirement	These changes are understood and can be worked independently from the OBF issues.	TBD
	SOPAD, SOLAR, RSOLAR (creating automation).	An Enhancement is necessary to accept shared line orders and manage the service order flow with automation between systems.	No Interim Requirement	No Interim Requirement	Establish transformation from the OBF forms to the Internal USOCs and FIDs.	4Q2000

[1] All timeframes and solution definitions are estimates based on pending requirements work and information to be provided by 3rd parties. These estimates should be considered as planning estimates, and are based on the current understanding of systems capabilities assessed during the operational impact review. For this reason, the estimates may be subject to change.

Gaps	Applications Impacted	Specific Issue	Interim Solution [1]	Deployment Timeframe [1]	Long-term Solution [1]	Deployment Timeframe [1]
	Manual SO Entry in SOPAD, SOLAR, RSOLAR	An Enhancement is necessary to accept shared line orders and manage the service order flow with a manual service order entry procedure.	Establish internal USOCs and FIDs for all systems within the Operational Support Systems environment.	1Q2000	See the automation items.	See the automation items.
Gap 3: Connecting Point Inventory	LFACS (All regions)	Current phase no impacts. Later phase, enhancements to allow for designated assignment locations (constrained loop assignment) and to reuse in place voice facilities.	Establish internal USOCs and FIDs. No substantial impacts to LFACS	1Q2000	Work any manual issues that may have been over sights.	2Q2000

Gaps	Applications Impacted	Specific Issue	Interim Solution [1]	Deployment Timeframe [1]	Long-term Solution [1]	Deployment Timeframe [1]
	SWITCH and APP	Enhancements to associate the customer's line with the connection points for the splitter, switch equipment, and ICDF, while reusing existing voice facilities.	Inventory the splitter in SWITCH as miscellaneous equipment. The resulting Manual assignments will fallout in the LPC. DLEC will pass ME FID on the LSR.	1Q2000 in limited volume.	Remove all the manual workarounds.	4Q2000 Telcordia offer.
			APP -- To simulate the transactions performed by the loop provisioning personnel to clear RMAs in SWITCH. This is required to support volume growth.	2Q2000 – APP, Automates portions of the manual process that falls out to the LPC.		

Gaps	Applications Impacted	Specific Issue	Interim Solution[1]	Deployment Timeframe [1]	Long-term Solution [1]	Deployment Timeframe [1]
	WFA/C	Table work for proper dispatch and workflow.	No known issue.	No known issue.	Establish internal USOCs and FIDs.	1Q2000
Gap 4: Repair Handling	NSDB/WFA	Repair tickets will flow through. NSDB for the design portion of the service.	No Interim Requirement		Line assignments are required as a part of NSDB for the design portion of the repair.	1Q2000
	LMOS	Repair tickets will flow through. LMOS for the POTS portion of the service.	No Interim Requirement		Line assignments are required as a part of LMOS for the POTS portion of the repair.	1Q2000
Gap 5: No interface between FOMS and WFA/DI	FOMS and WFA/DI	Interface bring up and testing between FOMS and WFA/DI.	No Interim Requirement		Test and turn up on the interface based on a WC rollout plan. Determination of DLECs intended Service offering allows for a smoother implementation.	1Q2000 (ongoing dependant on the DLEC Rollout.

Gaps	Applications Impacted	Specific Issue	Interim Solution[1]	Deployment Timeframe [1]	Long-term Solution [1]	Deployment Timeframe [1]
Gap 6: Single product, multiple customer (need 2 billing records to be created from a single order.)	Billing (CRIS)	Enhancements to bill the Co-Provider for shared line charges. Must have 2 CSRs that are related.	This is a Bulk bill solution (DLEC BAN per state). A DLEC will receive a bill that indicates that lines are shared, but to validate specific TN information requires that the CSR be reviewed. Back billing will be used to bring accounts up to date if service is provisioned before the interim solution can be implemented.	2Q2000	The interim billing mechanisms need to be modified to show TN detail, but this impact is unknown. Conversions will be needed once the billing systems are modified.	TBD
Gap 7: Need to identify accounts that are resold in IMA so that CLEC's cannot place orders against the line for line-sharing	IMA	Identify resold accounts and reject line sharing orders as appropriate. Similarly, identify line shared accounts and reject resale orders as appropriate.	CLECs will review CSRs prior to placing orders. U S WEST will also review CSRs as Service Orders are written.		Accounts will have the Line Sharing USOCs and FIDs on the CSRs. The handling of the End Customers and CLECs would then be handled via Methods.	See gap 6. Required concurrent with order automation long term solutions in Gap 2.

Gaps	Applications Impacted	Specific Issue	Interim Solution[1]	Deployment Timeframe [1]	Long-term Solution [1]	Deployment Timeframe [1]
Gap 8: Identify a method to cause an entry to the DLECs loss report for disconnected service	Loss and Completion	Depending on specific scenarios for a customer transfer between providers, modifications to the Loss and Completion reports must be made.	No Interim Requirement		Pending the scenario work identified in the meeting 10/29/99	TBD

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation – RA-3
Exhibits of Renee Albersheim
Pages 1 through 43
October 11, 2000

REDACTED

INTERIM LINE SHARING AGREEMENT

This Interim Line Sharing Agreement ("Agreement") between U S WEST Communications, Inc. ("ILEC") and @Link Networks, Inc., BridgeBand Communications, Inc., CDS Networks, Inc., Contact Communications, DIECA Communications, Inc. d/b/a Covad Communications Company, Jato Communications Corp. on behalf of its operating subsidiaries Jato Operating Corp. and Jato Operating Two Corp., Montana Wireless, Inc., MULTIBAND Communications, Inc., New Edge Network, Inc. d/b/a New Edge Networks, NorthPoint Communications, Inc., RHYTHMS LINKS, INC., and Western Telephone Integrated Communications, Inc. ("CLEC" or "CLECs") is entered into this 24th day of April, 2000, to govern deployment of line sharing in the states of Arizona, Colorado, Idaho, Iowa, Montana, Nebraska, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming. The Agreement is effective as of the date referenced in the preceding sentence and will terminate on a state-by-state, CLEC-by-CLEC basis when line sharing amendments to the interconnection agreements between ILEC and CLECs are approved by the relevant state public utility commissions as required by paragraph 36 below. ILEC and CLECs are referred to in this Agreement individually as a "Party" or collectively as the "Parties."

GENERAL

1. ILEC will provide CLEC with access to the frequency range above the voiceband on a copper loop facility used to carry analog circuit-switched voiceband transmissions. This frequency range will be referred to in this document as the "high frequency spectrum network element" or "HUNE". CLEC may use this access to provision any voice compatible xDSL technologies. Specifically permissible are ADSL, RADSL, G.lite and any other xDSL technology that is presumed to be acceptable for shared line deployment in accordance with FCC rules. Under this Agreement, "line sharing" is defined as the situation that exists when the CLEC has access to the HUNE and provides xDSL services on a loop that also carries ILEC POTS.

2. To order the HUNE, a CLEC must have a POTS splitter installed in the central office that serves the end-user of the loop. In addition, the CLEC must provide the end-user with, and is responsible for the installation of, a splitter, filter(s) and/or other equipment necessary for the end-user to receive separate voice and data services across the loop.

3. On or before June 6, 2000, ILEC will begin accepting orders for the HUNE on lines served out of every central office where CLEC has a POTS splitter installed.

4. Prior to July 31, 2000, the CLECs will not request conditioning of shared lines to remove load coils, bridged taps or electronics. If ILEC begins conditioning lines

for its xDSL services, CLECs will have the same option. By July 31, 2000, unless another date is agreed to by ILEC and CLEC in writing, the CLEC will be able to request conditioning of a shared line. ILEC will perform requested conditioning, including de-loading and removal of excess bridged taps, unless ILEC demonstrates in advance that conditioning that shared line will significantly degrade the end-user's analog voice service.

5. The CLECs initially will use ILEC's existing pre-qualification functionality and order processes to pre-qualify lines and order the HUNE. The CLECs will determine, in their sole discretion and at their risk, whether to order the HUNE across any specific loop. ILEC and the CLECs will continue to work together to modify these functionalities and processes to better support line sharing.

6. ILEC will initially provision the HUNE within the current standard unbundled loop provisioning interval at least 90% of the time. The Parties acknowledge that this interval may be subject to improvement based on systems mechanization and/or relevant state or federal regulatory orders.

POTS SPLITTER COLLOCATION AND OPERATION OF LINE SHARING EQUIPMENT

7. ILEC will provide CLEC with access to the shared line in one of the following ways, at the discretion of CLEC:

   (a) CLEC may place POTS splitters in ILEC central offices via Common Area Splitter Collocation. In this scenario, CLEC will have the option to either purchase the POTS splitter of its choosing or to have ILEC purchase the POTS splitter on the CLEC's behalf subject to full reimbursement. The CLEC will lease the POTS splitter to ILEC at no cost. Subject to agreed to or ordered pricing, ILEC will install and maintain the POTS splitter in the central office. ILEC will install the POTS splitter in one of three locations in the central office: (i) in a relay rack as close to the CLEC DSO termination points as possible; (ii) where an intermediate frame is used, on that frame; or (iii) where options (i) or (ii) are not available, or in central offices with network access line counts of less than 10,000, on the main distribution frame or in some other appropriate location, which may include an existing ILEC relay rack or bay.

   (b) CLEC may, at its option, place the POTS splitters in its own collocation area. ILEC will reclassify TIE cables, re-stencil framing, and perform any related work required to provision line sharing.

(c) Under either option (a) or (b), the POTS splitter will be appropriately hard wired or pre-wired so that ILEC is required to inventory no more than two points of termination.

8. In the event CLEC, or ILEC acting as purchasing agent for CLEC, is unable to procure line sharing equipment (i.e., POTS splitters, cabling, etc.) for Common Area Splitter Collocation in a timely manner, ILEC will proceed with the line sharing deployment schedules set forth in paragraphs 12 and 13 below and install the delayed equipment once the deployment for the subject state is completed. If the delayed equipment still is not available once the deployment for the subject state is completed, ILEC and CLEC will work together to establish an alternate deployment schedule for the affected central offices.

   (a) If the ILEC, acting as purchasing agent for the CLEC, is unable to procure line sharing equipment for Common Area Splitter Collocation in a timely manner, then the CLEC may provide ILEC with the missing equipment. However, the deployment schedules set forth in this Agreement may be impacted. If impacted, the deployment will follow the terms and conditions described above.

   (b) If ILEC is acting as purchasing agent for more than one CLEC in a central office and is unable to procure line sharing equipment for one or more of the CLECs in a timely manner, then none of the CLECs using the ILEC as purchasing agent will be able to order the HUNE in that central office until the equipment is installed for all such CLECs. This requirement does not apply to a CLEC that, upon being contacted by the ILEC of the equipment shortage, provides its own equipment to ILEC for installation. The CLEC will be notified by the ILEC of the required material on-site date for that central office and will have 2 business days to determine if the CLEC will be able to provide its own equipment.

9. CLEC and ILEC may use any POTS splitter that meets the requirements for central office equipment collocation set by the FCC in its March 31, 1999 order in CC Docket No. 98-147.

10. If a CLEC requests that a central office where it is not currently collocated be provisioned for line sharing, the CLEC will indicate its request on the collocation application for that central office.

11. CLEC will provide ILEC with applications for placement of POTS splitters in central offices based on the order set forth on the confidential Central Office Deployment List agreed to jointly by the CLECs and the ILEC and on the schedule set forth below. If the application date is missed by any CLEC, ILEC will accept the CLEC's late applications and install the POTS splitter within

30 days of the end of the schedule for the state where the central office is located or the normal interval for collocation under the CLEC's interconnection agreement, whichever is later. ILEC and CLEC will work together to resolve any problems with order-related data included on the applications within 5 business days of the CLEC receiving notification of the problems from ILEC. If the Parties are unable to resolve the problems after 5 business days, the application will be treated as a late application as defined above. Any changes received from the CLEC after 5 business days of the initial application date will also result in the application be treated as a late application.

First 145 Central Offices	March 24, 2000
Next 85 Central Offices	March 29, 2000
Next 65 Central Offices	April 3, 2000
Remaining Central Offices	April 10, 2000

12. Assuming CLEC reuses existing TIE cable capacity, ILEC will complete the TIE cable reclassification necessary to permit a CLEC to complete placement of POTS splitters in its own collocation areas in the central offices identified on the Central Office Deployment List based on the following schedule:

DATE	TOTAL NUMBER OF CUMULATIVE CENTRAL OFFICES
May 15, 2000	40-50
May 29, 2000	130-150
June 6, 2000	All remaining central offices identified on the Central Office Deployment List

Additional TIE cables will be installed in accordance with the standard intervals and processes set forth in the interconnection agreements between ILEC and CLECs at the completion of this deployment schedule or under an installation schedule mutually agreed upon by CLEC and ILEC. In situations where a CLEC places POTS splitters in its collocation areas, CLEC may begin placing orders for the HUNE in the central offices identified on the Central Office Deployment List in accordance with the above schedule.

13. ILEC will complete Common Area Splitter Collocation in the central offices identified on the Central Office Deployment List based on the following schedule:

DATE	TOTAL NUMBER OF CUMULATIVE CENTRAL OFFICES
May 15, 2000	40-50
May 29, 2000	130-150
June 6, 2000	165-180
June 26, 2000	230-260
July 31, 2000	All remaining central offices identified on the Central Office Deployment List

If a CLEC chooses to have POTS splitters placed in central offices via Common Area Splitter Collocation, CLEC may begin placing orders for the HUNE in the central offices identified on the Central Office Deployment List in accordance with the above schedule.

14. To deploy POTS splitters in a central office identified on the Central Office Deployment List, the CLEC must either: (a) have an existing collocation presence in the central office; or (b) have pending applications for collocation in the central office as of March 10, 2000.

15. If ILEC receives an application for new collocation in a central office that does not appear on the Central Office Deployment List, or where the applying CLEC does not meet the requirements of the preceding paragraph, ILEC will treat the application as a standard collocation application under the terms and conditions of the applicable interconnection agreement. CLEC will be able to order the HUNE in such offices beginning on the date the collocation installation is completed or July 31, 2000, whichever is later.

16. ILEC and the CLECs agree to work together to address and, where necessary and possible, find solutions for the following "Line Sharing Implementation Issues": (a) the implementation of an effective phased process to handle CLEC orders for the HUNE; (b) ILEC's ability to handle the existing and forecasted volume of

CLEC orders for the HUNE; (c) ILEC's ability to make central office loop assignments for the existing and forecasted volume of CLEC orders for the HUNE; (d) the ability of ILEC and CLEC to coordinate repairs; (e) the experience and education of the shared line end-user; (f) the CLEC's forecasts of shared line orders; and (g) the process for conditioning loops for line sharing.

17. Beginning on April 1, 2000, the CLECs will provide ILEC with non-binding, good-faith rolling quarterly forecasts for shared line volumes on a state-by-state, central office-by-central office basis. Additionally, CLEC will provide a 1.5 year non-binding, good-faith forecast by quarter to ILEC by June 1, 2000. ILEC will keep CLEC forecasts confidential and will not share such forecasts with any person involved in ILEC retail operations, product planning or marketing.

REPAIR AND MAINTENANCE

18. ILEC will allow the CLECs to access the combined voice and data line at the point where it is cross-connected to the POTS splitter. Under the scenario described in paragraph 7(a) above, the point of demarcation will be at the place where the data loop leaves the POTS splitter on its way to the CLEC's collocated equipment. Under the scenario described in paragraph 7(b) above, the point of demarcation will be where the shared line is cross-connected to the POTS splitter.

19. ILEC will be responsible for repairing voice services provided over the shared line and the physical line between the network interface device at the end-user premise and the point of demarcation in the central office. ILEC also will be responsible for inside wiring in accordance with the terms and conditions of inside wire maintenance agreements, if any, between ILEC and the end-users. CLECs will be responsible for repairing data services provided over the HUNE portion of the shared line. Each Party will be responsible for maintaining its own equipment. The Party that controls the POTS splitter will be responsible for maintaining it.

20. ILEC and CLEC are continuing to develop repair and maintenance procedures and agree to document final agreed-to procedures in a methods and procedures document that will be available on ILEC's web site. In the interim, ILEC and CLEC agree that the following general principles will guide the repair and maintenance process:

    (a) If an end-user complains of a voice problem that may be related to the use of the shared line for data services, CLEC and ILEC will work together and with the end-user to solve the problem to the satisfaction of the end-user. ILEC will not disconnect the data service without the written permission of the CLEC unless the end-user's voice service is so degraded that the end-user cannot originate or receive voice grade calls.

(b) Each Party is responsible for its own end-user base and will have the responsibility for resolution of any service trouble report(s) from its end-users. ILEC will test for electrical faults (i.e., opens, shorts, and/or foreign voltage) on the shared line in response to trouble tickets initiated by the CLEC.

(c) When trouble has been reported by CLEC, and such trouble is not an electrical fault in ILEC's network, ILEC will charge CLEC any applicable charges approved by the relevant state public utility commission.

(d) When trouble reported by CLEC is not isolated or identified by tests for electrical faults, ILEC may perform additional testing as requested by CLEC on a case-by-case basis. If this additional testing uncovers electrical fault trouble in the portion of the network for which the ILEC is responsible under this Agreement, the CLEC will not be charged for the testing. If the additional testing uncovers a problem in the portion of the network for which the CLEC is responsible under this Agreement, the CLEC will be charged any applicable charges set forth in interconnection agreements between ILEC and CLECs or by the relevant state public utility commissions. Where no such charges exist, CLEC will pay for such testing on a time and materials basis.

21. When the POTS splitter is placed in the central office via Common Area Splitter Collocation, CLEC will order and install additional splitter cards as necessary to increase POTS splitter capacity from the initial installation. CLEC will leave one empty card in every shelf to be used for repair and maintenance until such time as the card must be used to fill the shelf to capacity.

22. When the POTS splitter is located in the CLEC collocation area, CLEC may install test access equipment in its collocation area for the purpose of testing the shared line. This equipment must comply with the safety requirements set forth in any applicable FCC rules. When the POTS splitter is placed in the central office via Common Area Splitter Collocation, CLEC will have the ability to perform intrusive testing at the test access point on a line-by-line basis.

PRICING

23. ILEC and the CLECs agree to the following negotiated, interim prices for shared lines, splitter collocation and other elements noted in the following table:

Category	Element	Interim Price
Shared Line Non-Recurring	Installation option is basic installation – lift and lay	IA* price for basic installation – lift and lay
Shared Line Recurring	HUNE	Paragraph 25
	2 ITP/EICT – Interconnection Tie Pairs or	IA price

	Expanded Interconnection Channel Terminations	
Common Area Splitter Collocation Non-Recurring	Installation	$5,000.00 per shelf
Common Area Splitter Collocation Recurring	Equipment bay – per shelf	$4.85 per shelf
Cost of POTS splitters if provided by ILEC	POTS splitter	Market cost – in addition to the $5,000.00 flat rate
Non-recurring for TIE cable reclassification	TIE cables	Time and material for engineering and labor
Repair and Maintenance	Trouble Isolation and Additional Testing	Paragraph 20 (c) and (d)
Line Conditioning	Load Coil and Excess Bridged Tap Removal	IA price

* The relevant interconnection agreement between ILEC and CLEC.

24. ILEC and CLECs will continue work to arrive at appropriate cost recovery for operational support systems upgrades related to the shared line.

25. CLECs may choose from either of the following options for an interim recurring shared line rate:

(a) A rate of $5.40 per month per shared line; or

(b) A rate of $0 per month per shared line until January 1, 2001. On January 1, 2001, the interim recurring shared line rate will change to $8.25 unless ILEC continues to charge a rate of $0 per month per shared line to one or more CLECs as of that date. In the event ILEC continues to charge a rate of $0 per month per shared line to one or more CLECs as of January 1, 2001, ILEC will continue to charge all CLECs that selected this interim recurring shared line rate option a rate of $0 per month per shared line until such time as it begins to charge all CLECs $8.25 per month per shared line.

CLECs must select one of the foregoing options for an interim recurring shared line rate by May 1, 2000, and must notify ILEC of their selection through their account teams. Once a selection is made, a CLEC cannot change its selection.

26. All interim prices will be subject to true up based on either mutually agreed to permanent pricing or permanent pricing established in a line sharing cost proceeding conducted by state public utility commissions. In the event interim prices are established by state public utility commissions before permanent prices are established, either through arbitration or some other mechanism, the interim prices established in this Agreement will be changed to reflect the interim prices

mandated by the state public utility commissions; however, no true up will be performed until mutually agreed to permanent prices are established or permanent prices are established by state public utility commissions.

27. During the 60 day period immediately following the effective date of this Agreement, the Parties agree to negotiate in good faith in an effort to arrive at mutually agreed to permanent pricing for all of the elements listed in paragraph 23 above and operational support system upgrades related to line sharing. If at the conclusion of this 60 day period, the Parties have been unable to mutually agree to permanent pricing for some or all of such elements and/or operational support system upgrades related to line sharing, the Parties agree to ask the state public utility commissions for each of the states listed in the introductory paragraph of this Agreement to initiate a line sharing cost proceeding to establish permanent pricing for all elements, potentially including operational support system upgrades related to line sharing, still in dispute at that time.

OTHER

28. This Agreement constitutes the entire agreement between the Parties and supersedes all prior oral or written agreements, representations, statements, negotiations, understandings, proposals, and undertakings with respect to the subject matter hereof.

29. ILEC and CLEC enter into this Agreement without waiving current or future relevant legal rights and without prejudicing any position ILEC or CLEC may take on relevant issues before state or federal regulatory or legislative bodies or courts of competent jurisdiction. This clause specifically contemplates but is not limited to: (a) the positions ILEC or CLEC may take in any cost docket related to the terms and conditions of line sharing; and (b) the positions that ILEC or CLEC might take before the FCC or any state public utility commission related to the terms and conditions under which ILEC must provide CLEC with access to the HUNE.

30. The provisions in this Agreement are based, in large part, on the existing state of applicable law, rules, and regulations ("Existing Rules"). Among the Existing Rules are certain FCC orders, including the FCC's Third Report and Order in CC Docket No. 98-147 and Fourth Report and Order in CC Docket No. 96-98 released on December 9, 1999, which currently are being challenged. To the extent the Existing Rules are changed, vacated, dismissed, stayed or modified, the Parties shall amend this Agreement to reflect such change, vacation, dismissal, stay, or modification. Where the Parties fail to agree upon such an amendment, all disputed issues will be resolved in accordance with the dispute resolution provisions of the interconnection agreements between ILEC and CLECs incorporated by reference into this Agreement.

31. In addition to those provisions specifically referenced elsewhere in this Agreement, the provisions in the interconnection agreements between ILEC and CLECs related to the following are incorporated by reference into this Agreement: (a) limitation of liability; (b) indemnification; (c) force majeure; (d) warranties; and (e) dispute resolution. These provisions are incorporated on a state-by-state, CLEC-by-CLEC basis.

32. This Agreement is the joint work product of the Parties, has been negotiated by the Parties and shall be interpreted fairly in accordance with its terms and conditions. In the event of any ambiguities, no inferences shall be drawn against any Party.

33. This Agreement only may be amended in writing executed by all Parties to be bound by the amendment.

34. During the term of this Agreement, if ILEC either (a) enters into an agreement with any Party that modifies the rates, terms, and conditions of this Agreement as applied to that Party, or (b) enters into any other agreement for line sharing with any party containing rates, terms, and conditions different from those in this Agreement, ILEC will make such modified or different rates, terms, and conditions available to any interested Party. To the extent the modified or different rates, terms, and conditions are provided by ILEC only in certain locations or pursuant to some other limitation, then the modified or different rates, terms, and conditions only will be made available to interested Parties in those locations or subject to those same limitations. Unless otherwise agreed to by the Parties, this paragraph will not be incorporated into any interconnection agreement amendments entered into between ILEC and CLECs pursuant to paragraph 36 below.

35. This Agreement may be executed in multiple counterparts, each of which shall be deemed an original, but all of which shall together constitute but one and the same document. This Agreement may be executed where indicated below either by an original signature of a duly authorized representative of each Party or by a facsimile of such a signature.

36. ILEC and CLECs acknowledge the need to execute amendments to their interconnection agreements by June 6, 2000, to govern line sharing. The Parties further acknowledge that the rates, terms, and conditions of this Agreement will form the basis for the negotiation of the amendment. This Agreement will terminate upon execution of such amendments and will be replaced by the amendments. ILEC and CLEC further agree that any applicable window for petitioning a state public utility commission for arbitration of an interconnection agreement amendment for line sharing that would expire before June 6, 2000 is extended to June 16, 2000.

37. The Parties will work together to schedule a conference call with the state public utility commissions for each state listed in the introductory paragraph to this Agreement to explain this Agreement and answer any questions related to the Agreement. The Parties agree to work together to schedule and provide notice of the call in the most efficient and expeditious manner possible. The Parties further agree to respond to any questions or information requests from state public utility commissions in a joint manner and, in so doing, take all reasonable steps to preserve the confidentiality of the Central Office Deployment List.

38. The Parties will work together in good faith to address any problems that may arise in the execution of any part of this Agreement.

39. Any CLEC that is not a party to this Agreement may opt into this Agreement at any time prior to its expiration. CLECs must notify ILEC of which of the two options for interim shared line rates outlined in paragraph 25 above it selects at the time it opts into this Agreement or by May 1, 2000, whichever is later.

U S WEST, Inc.		**@Link Networks, Inc.**
John A. Kelley		Tim O'Neill
President – Wholesale Markets		Chief Network Officer
Date		Date

BridgeBand Communications, Inc.		**CDS Networks, Inc.**
Jon M. Hesse		Cleve Tooker
Chief Operating Officer and In-House Counsel		President
Date		Date

Contact Communications		**DIECA Communications, Inc.**

Arlen Taggart		Dhruv Khanna
Vice President		General Counsel
Date		Date

Jato Communications Corp. | **Montana Wireless, Inc.**

Patrick M. Green		Joan Mandeville
Vice President – Carrier Relations		Vice President – Administration
Date		Date

MULTIBAND Communications, Inc. | **New Edge Network, Inc.**

Tim Dodge		Robert Y. McMillin
Executive Vice President		Director – Interconnection
Date		Date

NorthPoint Communications, Inc. | **RHYTHMS LINKS, INC.**

Steve Gorosh		Eric Geis
Vice President and General Counsel		Senior Vice President of Regulatory Affairs and Development
Date		Date

Western Telephone Integrated Communications, Inc.

Cleve Tooker		
President		
Date		

System Descriptions

Appointment Scheduler

Appointment Scheduler is a system that manages technician schedules. Ordering systems, such as SONAR, IMA, electronically interface with Appointment Scheduler to reserve technician time slots.

APRIL (Automatic Provisioning Infrastructure Layer)

APRIL receives and views all Service Orders for special service activation. These services include, but are not limited to SS7, POTS, ISDN and AIN services.

BOSS (Billing and Order Support System)

BOSS is the system that manages the Customer Service Record (CSR). CSRs contain account status, billing, listing and services and equipment information. This system serves Qwest's central and eastern regions.

CARS (Customer Account Retrieval System)

CARS is the system that manages the Customer Service Record (CSR). CSRs contain account status, billing, listing and services and equipment information. This system serves Qwest's western region.

CNUM (Customer NUMber Management System)

CNUM is a Telcordia supported system designed to support telephone number administration, service negotiation, and service activation. CNUM provides a single repository for number administration that is technology and service independent. Along with ALOC, CNUM will replace PREMIS.

CRIS (Customer Records Information System)

CRIS is a billing system for the majority of residence and business account bills for exchange services. It calculates, prints, and mails bills to individual retail end-user customers for retail products, and CLECs for some interconnect (wholesale) products. After rating usage, CRIS posts service order processing updates, provisioning information, rating data, tolls, cash treatments, bills, payments, journal entries or adjustments, rate changes, message processing and other billing related information to the CSRs.

Data Arbiter

This system provides access from UNIX-based systems to PREMIS, BOSS/CARS, TIRKS, LFACS, and LMOS.

DELIVER/C (DELIVER/CONTROL)

DELIVER/C is a graphical user interface (GUI) which allows its Qwest's repair representatives to communicate with WFA/C for design services.

EB/TA (Electronic Bonding / Trouble Administration)

EB/TA is an interface for trouble reporting and Mechanized Loop Testing (MLT) results. EB/TA allows the CLEC's customer service representative to make inquiries, receive proactive status notifications, and electronically transmit trouble reports to Qwest for processing.

Facility Check

Facility Check is a Netscape-based interface used to access LFACS to determine whether loop facilities will be available for new service to a specific customer site.

FACS (Facility Assignment and Control System)

FACS is an "umbrella" term that includes LFACS, SWITCH, and SOAC.

FnS (Fetch-N-Stuff)

This system provides a common point of access to Qwest's OSSs using a standard application programmer interface (API) to simplify data access. Fetch 'N' Stuff accesses Appointment Scheduler, BOSS/CARS, CNUM, PREMIS, Facility Check, and WFA/DO.

FOM (Firm Order Manager)

The FOM is part of the IMA architecture that manages LSRs.

FOMS (Frames Operation Management System)

FOMS is a dispatch-in system for central office wiring instructions used by central

office technicians.

IABS (Integrated Access Billing System)

IABS is a billing system, focused on access or facility driven billing, whose functionality includes switched and special service orders, meet point billing, mechanized adjustments for interexchange carriers and other facilities based CLEC accounts.

IMA-GUI and IMA-EDI (Interconnect Mediated Access- Graphical User Interface and Interconnect Mediated Access- Electronic Data Interchange)

These two electronic interfaces provide CLECs with access to all of the functions necessary for the pre-ordering, ordering, and provisioning of resale and unbundled network elements

LEIS (Loop Engineering Information System)

LEIS is a downstream system of LFACS, with LFACS-equivalent data. The primary function of LEIS is to offload queries that would normally go to LFACS so that LFACS may perform its primary functions.

LFACS (Loop Facility Assignment and Control System)

LFACS is a component of FACS which maintains a mechanized inventory of outside plant facilities, (e.g., facility addresses, cables, cable pairs, serving terminals, cross connection devices, loops, etc.) and assigns the outside plant facilities to assignment requests received from SOAC as a result of customer service order activity.

LMOS (Loop Maintenance Operations System)

LMOS is a repair system for POTS services that provide trouble entry, tracking and work status. LMOS Host stores detailed line record information and maintains historical data of closed troubles.

LSMS (Local Service Management System)

LSMS is the local service provider's network database that holds down-loaded ported number information.

MARCH

MARCH provides an automated means of passing service-defining line-side switching machine translations to stored program controlled switches.

MEDIACC (MEDIated ACCess)

MECIACC is a system that provides a common electronic gateway for processing repair requests, created by external entities. MEDIACC supports repair reports for both Interexchange Carriers and CLECs.

MLT (Mechanized Loop Testing)

This is a system that tests and analyzes the condition of customer loops. MLT provides test results that assist in decision regarding trouble flow.

NSDB (Network and Services DataBase)

NSDB stores customer and circuit data for special service, message, carrier, and enhanced nondesigned services. This data is received from the Service Order Analysis and Control (SOAC) system during service order activity, and from the Telcordia TIRKS® system upon the issue or reissue of the Work Order Record and Details (WORD) document. NSDB also receives circuit and customer data updates and order completion notifications from WFA/C.

PAWS (Provisioning Analyst Workstation System)

PAWS manages requests for manual assistance (RMA) work and assigns them to the loop provisioning center according to the type of error as recognized by LFACS for correction. PAWS also serves a similar function for errors that fall out as RMAs for SWITCH.

PREMIS (PREMises Information System)

PREMIS is a legacy system that supports service negotiation for residence and small business. PREMIS provides address validation, telephone number selection, and interexchange carrier selection. PREMIS will be replaced by a suite of systems-ALOC, CNUM, and PIC Selection.

RCE (Repair Call Expert)

RCE assists a Repair Service Agent (RSA) in handling customer repair calls. RCE supports the customer interview process by providing the RSA with an appropriate sequence of questions along with hints to guide the interaction with the customer. A primary goal of RCE is to enable the front-end closing of a significantly higher percentage of reported troubles than is typically achieved without such assistance. For troubles that do require additional handling, RCE generates trouble reporting details in a consistent manner such that downstream processing can be performed more effectively.

SMS (Service Management System)

SMS is a hardware and software platform that supports the porting of telephone numbers. In concert with the Number Portability Administration Center (NPAC), SMS receives customer information from the old and new service providers (including the new location routing number), validates the information received, and downloads the new routing information when an "activate" message is received indicating that the customer has been physically connected to the new service provider's network. NPAC/SMS also contains a record of all ported numbers and a history file of all transactions relating to the porting of a number.

SOAC (Service Order Analysis and Control)

SOAC is a Telcordia system that controls the flow of service orders activity from Qwest service order processors (SOPs), to other downstream systems. Based on the service order input, SOAC determines which operations systems need to be involved in activating service, and provides instructions and sequencing to those operations systems.

SONAR (Service Order Negotiation and Retrieval)

SONAR is a system used to create and submit service orders for non-designed services for residential and small business customers.

SOP (Service Order Processors)

SOLAR (Service Order Logistics and Reference), SOPAD (Service Order Processor and Distribution) (CORD for western), and RSOLAR (Regional SOLAR). Within each region, the corresponding SOP for that region directs/processes service orders for all product types. SOPAD is the SOP in the central region. SOPAD distributes the order to necessary systems such as directory listings, E911, and billing systems. SOLAR is the SOP in Qwest's eastern region; RSOLAR is the SOP in the western region.

SWITCH

SWITCH is a central office inventory system. With cable pair data from LFACS and telephone number inventory information from CNUM, SWITCH completes the initial step in designing the circuit package. SWITCH supports line-side and trunk-side central office provisioning of digital, analog, and packet switching facilities by providing connection information for central office personnel.

WFA (Work Force Administration)

This is an umbrella term that includes three subsystems: WFA/C, WFA/DI and WFA/DO. WFA/C (Work Force Administration/Control) mechanizes the administration of the installation and maintenance of designed and non-designed circuits. WFA/C directs the flow of work items to WFA/DO and WFA/DI. WFA/DI automates the work assignments of the technicians working within the central offices. WFA/DO automates the support of the dispatch function for outside plant installation, maintenance and routine work. WFA/DO provides screening, pricing, mapping, routing, scheduling and loading functions within a dispatch center.

DESCRIPTIONS OF MODIFICATIONS

Line sharing will be implemented in two phases. The first phase will address the modifications necessary to accomplish line sharing in the central office - either in the CLEC's collocation area or in the common area. The second phase will allow the splitter to placed in a remote terminal.

To accommodate line sharing, systems and processes will have to be modified. It will also be necessary to introduce new data elements that will have to be communicated between the companies involved in sharing the line and will have to be stored in new or existing databases. This document describes first, the additional data required to support line sharing. Second, it describes the systems used for pre-ordering, ordering, and provisioning, as well as the changes needed to support line sharing. The document also includes a diagram depicting the relationship between these systems. Further, this document describes the systems used for repair, the changes needed to support line sharing, and displays a diagram depicting the relationship between these systems. Finally, there is a description of the billing system and the modifications needed to support line sharing.

NEW DATA ELEMENTS

Three new FIDs (field identifiers) will be introduced. The data needed consists of:

UNN = Data CLEC identifier (RSID, ZCID, DLEC equivalent)

UNE = Data CLEC circuit ID (currently, the end-user's telephone number)

UCP = Cable & pair equivalent comprised of the following fields (Type, Meet Point (point of termination to the splitter), Central office or Field indicator, and Optional (power spectrum density mask).

PRE-ORDERING

CLECs will use the current functionality in the IMA gateway, which is comprised of GUI and an EDI components, to determine if the line is qualified for ADSL service. To further support line sharing, particularly in regards to CLECs' acquisition of customer loop information, Qwest, beginning mid-year 2000, has begun to provide CLECs with electronic batch files containing loop information on a per wire center basis. The batch files Qwest will provide to CLECs will contain listings of all active telephone numbers within a particular wire center as well as additional loop information for each telephone number listed. CLECs will be able to access these batch loop files through a CLEC-accessible, Qwest web site. The batch files will be refreshed on a rolling basis monthly.

ORDERING

The IMA (GUI/EDI) gateway is comprised of two electronic interfaces used to provide CLECs access to pre-ordering, ordering, provisioning, and repair functionality of resale and unbundled network elements.

- To support line sharing, the IMA gateway will have to be modified to allow for additional data elements, including, but are not limited to: 1) request type (a request for line sharing); 2) TOS (type of service); 3) circuit ID (UNE FID); and 4) meet point (UCP FID). This functionality will include edit functions for syntax and cross-edit requirements for all of the new data elements. The LSR must be modified to allow for the new data elements to be passed to Qwest to support line sharing. The proposed modifications were introduced to the Ordering and Billing Forum (OBF) in early February 2000 by Qwest with the concurrence of the participating CLECs.

SONAR is the system used to create and submit service orders for nondesigned services for residential and small business customers.

- To support line sharing, SONAR must be modified to recognize that the account on which an order is being issued has a shared line to ensure the voice products/services being ordered are compatible with data services.

There are three service order processors, collectively called the SOPs. SOLAR (service order logistics and reference) is the SOP in Qwest's eastern region, SOPAD (service order processor and distribution) is the SOP in Qwest's central region, and RSOLAR (Regional SOLAR) is the SOP in Qwest's western region.

- To support line sharing, these SOPs must also be modified to accept the new FIDs and to exhibit specific behavior based on the presence of those FIDs. To support line sharing, the SOPs must create and distribute one record to LMOS for repair purposes and two records to CRIS for billing purposes.

SOAC controls the flow of service order activity from the SOPs to the downstream systems. Based on the type of service order, SOAC determines which downstream systems need to be involved in activating service, and provides instructions and sequencing to those systems.

- To support line sharing, SOAC must recognize that this is an order to share the line, perform proper telephone number treatment within CNUM, and create and distribute one record to NSDB for repair. To perform this for line sharing is new functionality. In addition, it must interpret the UCP FID information and determine if the splitter will be placed in the central office or in a remote terminal. If the splitter will be placed in the central office, SOAC will send the information to SWITCH for assignment. If the splitter will be placed at a remote terminal, SOAC will send the information to LFACS for assignment.

PROVISIONING

LFACS maintains a mechanized inventory of outside plant facilities and assigns the outside plant facilities to assignment requests received from SOAC. It also provides cable & pair information, addresses, and terminal locations to SOAC.

- To support line sharing, LFACS will have to recognize and receive the meet point information from the UCP FID and inventory it as a cable & pair assignment when a remote line sharing request is made. LFACS must also recognize when the line sharing request is to be a central office solution and ignore the connection information and allow SWITCH to perform the assignment function. In addition, it will designate that the line should not be line station transferred to ensure that the end-user's line is not replaced with a loop that is not DSL-capable.

SWITCH is a central office inventory system. It takes the telephone number information and the cable & pair information from LFACS and guides the information to the correct network location. SWITCH supports line-side and trunk-side central office provisioning of digital, analog, and packet switching facilities by providing connection information for central office personnel.

- To support line sharing, SWITCH will have to recognize and receive the meet point information from the UCP FID and inventory it as a miscellaneous equipment. In addition, there will be conversion activities associated with this new functionality. Qwest has supported line sharing in a quasi-manual mode and the original inventory information has been input as free flow text behind a FID. To begin using the new functionality in SWITCH, Qwest must build the inventory by parsing the free flow text, analyzing it and inputting it into the database.

MARCH / APRIL are systems that receive and review all orders for special service activation.

- To support line sharing on a finished voice service, APRIL must be able to pass the service order without errors. In the event that a data CLEC wishes to share an unbundled loop with a voice CLEC, these systems will have to remove the telephone number / office equipment (voice switch location) relationship. In addition, two meet points will have to be inventoried and assigned: one for the voice CLEC's unbundled loop and one for the data CLEC's splitter port location.

WFA/DO automates the support of the dispatch function for outside plant installation, repair, and routine work. WFA-DO provides screening, pricing, mapping, routing, scheduling, and loading functions within a dispatch center.

- To support line sharing, WFA/DO will have to recognize that this is a line sharing order when dispatching for installation and repair. In addition, it will have to recognize a line sharing order when performing the service order complete process.

WFA/DI automates the work assignments of the technicians working within the central offices.

- To support line sharing, WFA/DI must interface with FOMS, which is a dispatch-in system for central office wiring instructions used by central office technicians. In addition, WFA/DI will have to recognize that this is a line sharing order when performing the SOP auto-complete process.

NSDB stores customer and circuit data for special service, message, carrier, and enhanced nondesigned services. The NSDB line record must have indicators that are descriptive to a technician that this line is shared. This is necessary because in the event that repair is required, the technician must understand the condition of the line.

- To support line sharing, NSDB must be able to recognize that this is a shared line when it stores the record for repair purposes.

WFA/C mechanizes the administration of the installation and maintenance of designed and nondesigned circuits. It also directs the flow of the work items to WFA/DO and WFA/DI.

- To support line sharing, WFA/C must be able to recognize that this is a shared line, be able to accept the new data, and allow for auto-completion of line sharing orders.

LMOS is a repair system for POTS services that provide trouble entry, tracking and work status.

- To support line sharing, LMOS must be able to receive the completed service order and record the line record as a shared line. Although this data is recorded similarly to the way it is recorded in NSDB, it is also necessary to record it in LMOS because the additional skills required to repair a simple POTS line that has a more complex wiring arrangement are typically found in a designed services technician. This allows both technicians to have knowledge of the condition of the line.

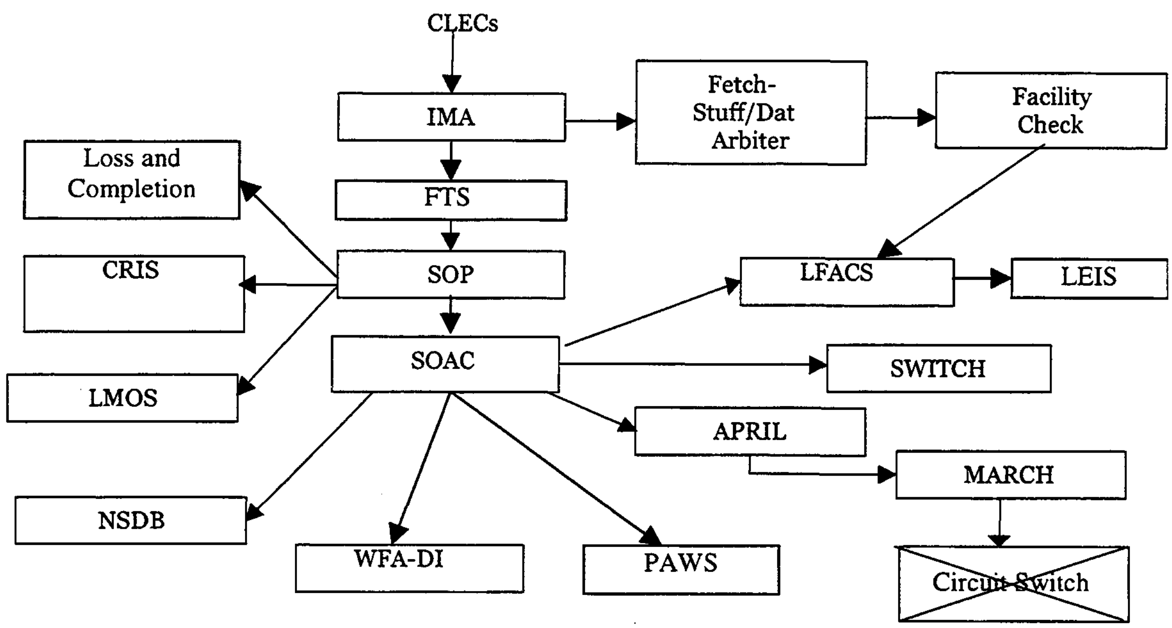
PAWS (Provisioning Analyst Workstation System) is a downstream system from SOAC and LFACS. Service orders that contain errors (e.g. incorrectly entered loop data) sometimes make their way partially through the downstream systems without the SOPS recognizing the errors. A service order with with this type of error can drop out of either SOAC or LFACS as a request for manual assistance (RMA). The RMA is sent to PAWS. PAWS manages the RMA work list and assigns them to the appropriate loop provisioning center (LPC) according to the type of error as recognized by LFACS for correction. PAWS also serves a similar function for errors that fall out as RMAs for SWITCH.

- To support line sharing, PAWS must be updated to recognize incorrect splitter location requests based on information contained in SWITCH or LFACS, depending on the type of line sharing requested. In addition, PAWS must be modified to be able to recognize the three FIDs associated with orders for line sharing. PAWS must also be modified to recognize that this is a line shared order to properly route the RMA to the appropriate technicians with the skills to remedy errors specific to line sharing orders.

LEIS (Loop Engineering Information System) is a downstream system of LFACS, with LFACS-equivalent data. The primary function of LEIS is to offload queries that would normally go to LFACS so that LFACS may perform its primary functions.

- To support line sharing, LEIS must be modified in the same way that LFACS must be modified. Specifically, LEIS will have to recognize and receive the meet point information from the field identifier (FID) and inventory it as a cable & pair assignment when a remote line sharing request is made.

Line Sharing Ordering and Provisioning Flow

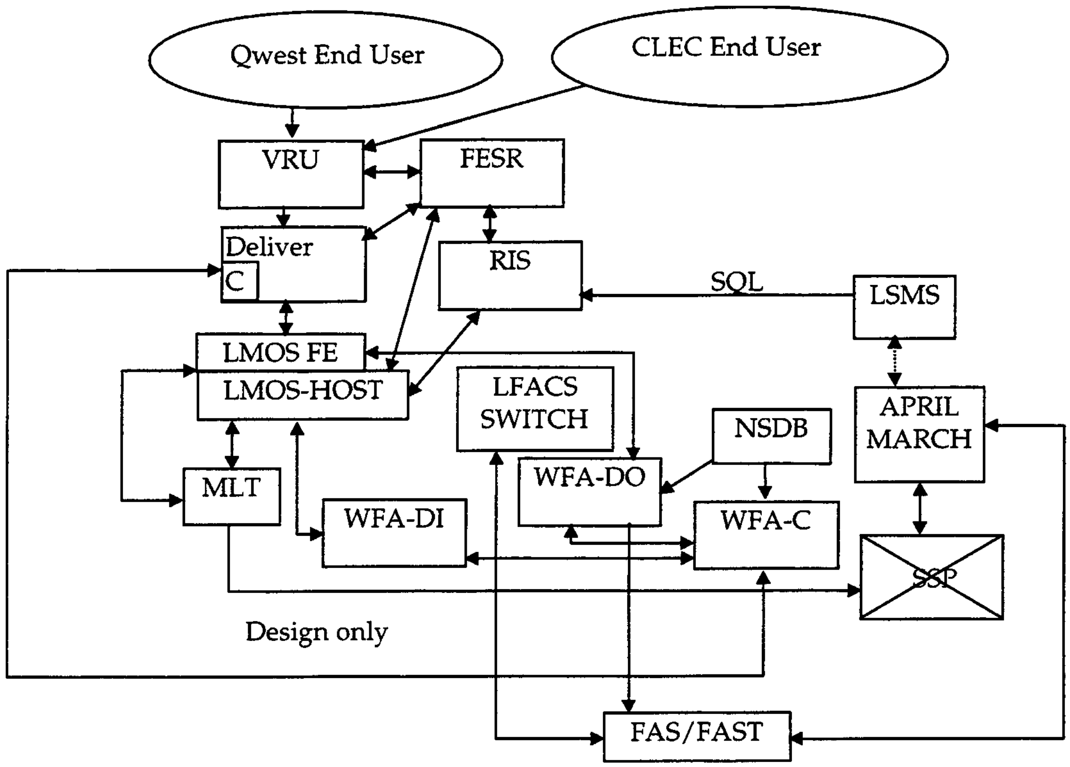


REPAIR

VRU and FESR are collectively the voice response units that contain a script of the repair scenarios that can occur. These scripts allow an end-user to walk through the VRU and through associated button-tone responses by the end-user will direct the customer inquiry to the appropriate repair function.

- To support line sharing, all of the scenarios must first be defined, the scripts be coded into the VRU, and the systems modified to react appropriately to the button-tone responses described in the script for the line sharing scenarios.
- Repair for data issues is to be deferred to the CLEC, while voice repair remains with Qwest. This is very different from the other resale and unbundled network elements because those records are marked as belonging to one LEC - the CLEC. Line sharing results in single records having two owners (Qwest and the CLEC). Specialized markings and logic are required to support this condition in the VRU/FESR, LMOS, and NSDB systems.
- Test access must also be considered. The access must allow for voice testing and data testing based on the location of the meet points. The records in LMOS and NSDB must provide this information to the technician so that test access and responsibility is understood.

Line Sharing Repair System Flow



BILLING

CRIS is a billing system for the majority of residence and business account bills for exchange services. It calculates, prints, and mails bills to individual retail end-user customers for retail products, and CLECs for some interconnect (wholesale) products. After rating usage, CRIS posts service order processing updates, provisioning information, rating data, tolls, cash treatments, bills, payments, journal entries or adjustments, rate changes, message processing and other billing related information to the CSRs.

- To support line sharing, CRIS must be modified to create/modify two customer service records (CSRs) for one product - line sharing. The end-user's account must be updated to reflect that the line is now shared. A new summary bill for the CLEC must be created to establish the relationship to the end-user's telephone number. In addition, CRIS must bill the CLEC on a wholesale summary bill for any charges associated with line sharing.

BEFORE THE ARIZONA CORPORATION COMMISSION

CARL J. KUNASEK
CHAIRMAN
JIM IRVIN
COMMISSIONER
WILLIAM A. MUNDELL
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	**DOCKET NO. T-00000A-00-0194** **AFFIDAVIT OF** **RENÉE ALBERSHEIM**
STATE OF COLORADO	)	

COUNTY OF DENVER

Renée Albersheim, of lawful age being first duly sworn, deposes and states:

1. My name is Renée Albersheim. I am a Regulatory Manager - Wholesale and Long Distance Entry of Qwest Communications in Denver, Colorado. I have caused to be filed written testimony and exhibits in support of Qwest in Docket No. T-00000A-00-0194.

2. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge and belief.

Further affiant sayeth not.

Renée Albersheim
Renée Albersheim

SUBSCRIBED AND SWORN to before me this 10th day of October, 2000.

Rebecca [signature]
Notary Public

My Commission Expires:

11/12/2000

BEFORE THE ARIZONA CORPORATION COMMISSION

CARL J. KUNASEK
CHAIRMAN
JIM IRVIN
COMMISSIONER
WILLIAM A. MUNDELL
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO U S WEST COMMUNICATIONS, INC'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	**DOCKET NO. T-00000A-00-0194**

DIRECT TESTIMONY OF

LARRY B. BROTHERSON

QWEST CORPORATION

REDACTED

OCTOBER 11, 2000

TABLE OF CONTENTS

EXECUTIVE SUMMARY

My testimony sets forth Qwest Corporation's ("Qwest") recommendations regarding reciprocal compensation issues in this cost docket. Specifically, I address the issue of whether call termination charges should apply to ISP-bound traffic.

Local call termination cannot be properly addressed by the Arizona Corporation Commission in this proceeding without dealing with the issue of ISP-bound traffic and the costs and public policy implications of including ISP-bound traffic in any pricing structure with a reciprocal compensation obligation. On the issue of reciprocal compensation, the Commission should reaffirm its decision in the Sprint arbitration that Qwest is not required to pay reciprocal compensation for ISP- bound traffic as part of the local call termination pricing structure.

In the Sprint arbitration decision, this Commission recognized that to require reciprocal compensation for ISP-bound traffic is counter to public policy. Thus, the Commission ordered bill and keep for ISP-bound traffic.

QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.

A. My name is Larry B. Brotherson. I am employed by Qwest Corporation ("Qwest"), f/k/a U S WEST Communications, Inc., as a director in the Wholesale Markets organization. My business address is 1801 California Street, Room 2350, Denver, Colorado 80202.

Q. BRIEFLY OUTLINE YOUR EMPLOYMENT BACKGROUND.

A. In 1979, I joined Northwestern Bell Telephone Company. I have held several assignments within Northwestern Bell, and later within Qwest, then U S WEST, primarily within the law department. Over the past 20 years, I have been a state regulatory attorney in Iowa, a general litigation attorney, and a commercial attorney supporting several organizations within Qwest. My responsibilities have included evaluating and advising the company on legal issues, drafting contracts, and addressing legal issues that arise in connection with specific products. With the passage of the Telecommunications Act of 1996 ("the Act"), I was assigned to be the attorney in support of the Interconnection Group. In that role, I was directly involved in negotiating with the CLECs contract language implementing various sections of the Act, including the Act's reciprocal compensation provisions. In 1999, I assumed my current duties as director of wholesale advocacy.

My current responsibilities include coordinating the witnesses for all interconnection arbitrations and for hearings related to costs and disputes over interconnection issues. Additionally, I work with various groups within the Wholesale Markets organization of Qwest to develop testimony addressing issues associated with interconnection services.

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND?

A. I have two degrees: a Bachelor of Arts degree from Creighton University in 1970, and a Juris Doctorate degree from Creighton University in 1973.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE ARIZONA CORPORATION COMMISSION?

A. Yes. I testified in the Sprint arbitration, Docket Nos. T02432B-00-0026 and T01051B-00-0026.

TESTIMONY

Q. PLEASE PROVIDE AN OVERVIEW OF YOUR TESTIMONY.

A. The purpose of my testimony is to show that: (1) local call termination rates should be imposed on historical local traffic; (2) ISP-bound traffic is interstate, not local, and should not be included in any calculations for local reciprocal compensation; (3) Qwest, as well as other local providers in Arizona already subsidizes ISP-bound traffic through the ISP exemption and by providing additional investment in the local network to handle the large volume of Internet traffic; (4) paying a third party to pass ISP-bound calls through their switch to the world wide web is not an alternative to payment of access charges, will not advance any public policy that benefits Arizona rate payers, will not improve competition for local service in Arizona and, indeed, ultimately will harm the rate payers.

Q. WHAT POLICY AND PUBLIC INTEREST CONCERNS SHOULD THE COMMISSION CONSIDER IN DECIDING THE APPROPRIATE TREATMENT OF ISP-BOUND TRAFFIC IN THIS PROCEEDING?

A. The implications of the decision regarding what to include in local call termination will have significant public policy implications. Ultimately, payments related only to local traffic will create a robust competitive environment, consisting of many alternative networks and providers. Creating financial incentives to market to ISPs will create a quasi-regulated system consisting of a few facilities-based local carriers, such as Qwest, providing connections to companies whose financial success is determined only by their ability to arbitrage Qwest's local call termination rates. These companies' primary business would be to sign up ISPs and draw huge payments unrelated to costs and created by use of voice based call termination rates on largely one-way calling patterns for Internet traffic.

Q. WHAT ARE QWEST'S RECOMMENDATIONS FOR THE APPROPRIATE APPLICATION OF RECIPROCAL COMPENSATION IN ARIZONA?

A. Qwest believes the local compensation rates established by this Commission should apply only to local traffic exchanged between local carriers. Qwest does not believe that any Arizona public policy objective is served by including ISP-bound traffic in reciprocal compensation. Internet traffic is non-local, interstate in nature and, therefore, should be subject to interstate access charge compensation. Just because the Federal Communications Commission has indefinitely exempted Internet-related traffic from access charge compensation, does not mean that it should now somehow qualify as local traffic or be subject to reciprocal compensation. Indeed local telephone companies already are bearing the burden of Internet traffic without compensation. Paying a second local provider in addition to handling this traffic on their own network adds nothing to local competition beyond the competition for ISP business so as to generate one-way traffic from Qwest's network.

Q. DO OTHER COMPANY WITNESSES ADDRESS THIS CONCERN?

A. Yes. Dr. William Taylor will address the economic issues arising from the inappropriate application of reciprocal compensation to ISP-bound traffic and its policy implications.

Q. HAS INTERNET TRAFFIC BEEN RECOGNIZED HISTORICALLY AS BEING PREDOMINATELY INTERSTATE, NOT LOCAL, IN NATURE?

A. Yes. The FCC has traditionally and consistently concluded that Internet traffic is interstate in nature. As early as 1983, in a proceeding involving the application of interexchange access charges to non-carrier entities like enhanced service providers (a definitional category under FCC rules that includes ISPs), the FCC stated:

> A facilities-based carrier, reseller or enhanced service provider might terminate few calls at its own location and thus would make relatively heavy interstate use of local exchange services and facilities to access its customers.

<u>MTS and WATS Market Structure</u>, CC Docket No. 78-72 Phase I, Memorandum Opinion and Order, 97 FCC 2d 682, 711 (1983)("MTS/WATS Market Structure Order"). In this Order, the FCC extended interstate access charges to certain interstate access users, but determined as a policy matter to exempt enhanced service providers from such charges in order to spare those carriers the shock of a too-sudden increase in charges.

> We believe that it is reasonable similarly to require that carrier access charges be applied to any private line reseller to which ENFIA would have applied. <u>Other users who employ exchange service for jurisdictionally interstate communications, including . . . . enhanced service providers</u>, . . . , who have been

paying the generally much lower business service rates, would experience severe rate impacts were we immediately to assess carrier access charges upon them.

Q. IN YOUR VIEW, ARE THE FCC'S CONSISTENT CONCLUSIONS ABOUT THE INTERSTATE NATURE OF INTERNET TRAFFIC DISPOSITIVE OF WHETHER QWEST SHOULD BE REQUIRED TO PAY RECIPROCAL COMPENSATION FOR THIS TRAFFIC?

A. No. The FCC's conclusions about the interstate nature of Internet traffic provide substantial support for not requiring Qwest to pay reciprocal compensation for this traffic. However, the FCC has stated that its pronouncements that this traffic is interstate are not dispositive of whether a carrier should be required to pay reciprocal compensation. In the ISP Order, Declaratory Ruling and Notice of Proposed Rulemaking, *In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Inter-Carrier Compensation for ISP-Bound Traffic,* CC Docket Nos. 96-98 and 99-68 (FCC February 25, 1999) (ISP Order), which was recently vacated and remanded by the United States Court of Appeals for the District of Columbia, the FCC left the door open for state commissions to order the payment of reciprocal compensation for Internet traffic. At the same time, the FCC emphasized that "state commissions also are free not to require the payment of reciprocal compensation for this traffic and to adopt another compensation mechanism." ISP Order at ¶ 26. Thus, while this Commission is not bound by the FCC's interpretation, it is free to decide independently that there are very sound public policy reasons to exclude reciprocal compensation payments on ISP-bound traffic and limit reciprocal compensation to local traffic. Presumably a factor in making those policy decisions is how payments to another local company on ISP-bound traffic including interstate voice toll calls could impact Arizona ratepayers.

Q. HAS THE FCC ADDRESSED WHETHER, AS A FACTUAL MATTER, INTERNET CALLS "TERMINATE" AT THE ISP'S LOCAL SERVER?

A. Yes. The FCC has concluded that Internet calls "do not terminate at the ISP's local server, as CLECs and ISPs contend, but continue to the ultimate destination or destinations, specifically at an Internet website that is often located in another state." ISP Order at ¶ 12.

Q. WHAT DOES QWEST PROPOSE AS THE APPROPRIATE PUBLIC POLICY FOR THE PAYMENT OF LOCAL CALL TERMINATION?

A. Qwest believes it is only appropriate to require payment of local call termination charges for traffic that is truly local. Because ISP-bound traffic is not local, it should not be subject to reciprocal compensation, Qwest asks the Arizona Corporation Commission to reaffirm its prior decision in the Sprint arbitration. Furthermore, imposing local reciprocal compensation on this traffic only compounds the problems created by the access charge exemption, in fact local reciprocal compensation is <u>inconsistent</u> with that exemption. As Dr. Taylor discusses in his testimony, there are strong policy reasons for not requiring Qwest to pay reciprocal compensation for this traffic.

Q. IS THE LOCAL EXCHANGE NETWORK USED TO PROVIDE INTERNET SERVICE?

A. Yes. Internet traffic, like long distance traffic, uses the local exchange network. When a caller makes a long distance call, the call originates on the network(s) of one or more local providers who route the call to an interexchange carrier's point of presence ("POP"). The interexchange carrier then routes the call to the local exchange carrier serving the called party. That local exchange carrier then terminates the call.

Similarly, when a caller accesses the internet, the call originates on the network(s) of one or more providers who route the call to an ISP. The call is then routed onto an Internet backbone to be terminated at the website the caller seeks to contact. Attached as Exhibit LBB-1 is a diagram showing the similarity between long distance traffic and ISP-bound traffic. The use of the local network by an ISP or an IXC is not a proper measure of whether a service should be included for reciprocal compensation purposes.

Q. HAS ISP-BOUND TRAFFIC PLACED ANY ADDITIONAL BURDENS ON LOCAL EXCHANGE CARRIERS?

A. Yes. ISP-bound traffic with its long hold times has dramatically increased the usage on Qwest's network as well as the networks of other local service providers. This increase has required Qwest to invest capital dollars to increase the capacity of its network in Arizona and its networks in other states. Qwest has added large volumes of trunks and switching capacity to respond to the usage demands created by ISP-bound traffic. With Internet usage continuing to grow at rapid rates, the need for large amounts of capacity in local networks likely will continue for the foreseeable future. If Qwest is required to pay tens of millions annually in reciprocal compensation in addition to the capital expenditures resulting from ISP-bound traffic, the financial burden will become enormous. If the Commission were to include ISP-bound traffic for reciprocal compensation, the resulting financial burden would have to be shouldered by Qwest and ultimately by all its rate payers, not just those who access the Internet. This result would not be in the public interest.

Q. IF THE TRADITIONAL ACCESS SERVICE RATE STRUCTURE APPLIED, HOW WOULD QWEST AND OTHER CLECS RECOVER THE COST OF HANDLING ISP-BOUND TRAFFIC?

A. Since the FCC has recognized that ISP-bound traffic is largely interstate, Qwest and other local providers as well, would recover the cost of handling ISP-bound traffic through access charges. Historically, when two local exchange carriers jointly provide access for an interstate service, the two LECs would each collect their access charges from the ISP. From a network perspective, the routing of an ISP call is very similar to the routing of a long distance call. Both types of calls involve two local exchange carriers that are jointly providing access to an interstate service. In addition, with both a long distance call and an ISP-bound call, the originating carrier – Qwest – does not know the ultimate destination of the call and does not deliver the call to that final destination. Instead, the originating carrier hands off the call to another local carrier for delivery to the final destination. The similarity in the routing of long distance and ISP-bound calls supports adopting a similar type of compensation mechanism for these calls. Each local company shares in the benefit, access revenues, or the burden, access charge exemptions, equally.

ISP dial-up access is analogous to jointly provided Feature Group A service, a type of access service that has been in place in Arizona and other states for many years. Both are line-side connections that allow end-users to dial a local number to reach an interstate service provider, which then switches the transmission to its ultimate destination (in this case the world wide web) using additional information provided by the end-user.

Q. WHAT IS THE EFFECT OF THE FCC'S ACCESS CHARGE EXEMPTION UPON QWEST'S AND CLECS ABILITY TO RECOVER THE NETWORK COSTS OF ORIGINATING ISP-BOUND TRAFFIC?

A. The access charge exemption leaves Qwest and other local companies in essentially the same position. All local service providers lose switched access revenues that, but for the FCC's access charge exemption, would be collected from the ISP. This inability of a local provider to recover it's costs associated with handling ISP traffic, the FCC access charge exemption, was in existence and well known when CLECs requested certification by this Commission to provide local service in Arizona.

The FCC's access charge exemption places both Qwest and CLECs in the position of having incurred the cost of carrying ISP-bound traffic while barred from charging for those costs. Both Qwest and the CLECs incur costs that should be recovered -- regardless of where the ISP call is originated. If the call originates on Qwest's network and is routed over a CLEC network in order to reach the ISP both Qwest and the other CLEC incur the costs associated with the transport and switching on its network.

[PROPRIETARY DATA BEGINS]

Q. HAS QWEST IDENTIFIED THE AMOUNT OF ISP TRAFFIC EXCHANGED BETWEEN QWEST AND CLECS IN ARIZONA?

A. Yes, it has. For the first 8 months of this year the number of ISP minutes delivered to CLECs are and is growing rapidly. It is projected that for 2000 the annual minutes will be .

Q WHAT IS THE MAGNITUDE OF THE LOST ACCESS REVENUE IN THE STATE OF ARIZONA FOR TRAFFIC GENERATED BY QWEST END USERS AND TERMINATED TO ISPS THAT ARE BEING SERVED BY CLECS?

A. Based upon the minutes of ISP-bound traffic terminating to all CLECS for the first eight months of 2000 and using as a *surrogate* the rate of one cent per minute for interstate originating switched access, the amount of switched access that Qwest must forego from calls to ISPs served by CLECs in Arizona because of the ISP exemption is annually. Qwest is not contending that CLECs owe Qwest this amount, this number is only to show the lost access revenues, the amount the ISP would have paid Qwest but for the ISP exemption. It is true that the CLEC also is unable to collect any access revenues from the ISP to offset its own expenses associated with handling these ISP-bound calls. However asking one local provider essentially to make up for the loss in access revenues by charging the joint local provider reciprocal compensation ignores the fact that ***both*** companies have incurred expenses that they are both prevented from recovering. There is no compelling reason why Qwest, in addition to not receiving access charges to recover it's own costs, should be required to make up for the lost access revenues of a competing local provider.

[PROPRIETARY DATA ENDS]

Q. IS THERE A DISTINCTION BETWEEN ISP PROVIDERS AND CLECS?

A. Yes, but that distinction is rapidly disappearing. AT&T recently announced its strategic alliance with AOL, America's largest ISP. CLEC owned ISPs are also entering the new business of access free long distance over the internet. In conjunction with its purchase of a 39% stake in Net2Phone

AT&T's own ISP, WorldNet, is offering 1000 free minutes of domestic long distance calling from personal computers to phones using Net2Phone's web-based communications technology. Nextlink has just announced a $2.9 billion investment in Concentric, a major ISP. And Sprint now owns 14.7% of the second largest ISP in the world, Earthlink. Every CLEC-owned ISP already receives subsidies from the local telephone provider today by virtue of the access charge exemption. The local telephone company must make the investment to beef up its network for end users to accommodate these ISP-bound calls with their extremely long hold times and yet cannot recover this investment from the cost causer because the ISP is exempt from access charges. There is no sound public policy reason for the Arizona Commission to expand this subsidy by requiring payment to the CLEC that owns the ISP for accepting the traffic it created.

Q. CAN YOU GIVE AN EXAMPLE OF WHY LOCAL RECIPROCAL COMPENSATION ON ISP-BOUND TRAFFIC IS NOT AN APPROPRIATE CHARGE FROM ONE LOCAL PROVIDER TO ANOTHER?

A. Yes. While the access charge exemption applies to all ISP-bound traffic, using a voice call over the Internet is the best way to show why local reciprocal compensation on ISP-bound calls is not an appropriate alternative for this kind of interstate traffic. Assume two parties, one an Ameritech customer in Chicago and the other a Qwest customer in Phoenix who places a long distance call to Chicago using the Internet. These end users can have a 20 minute voice conversation using their computers, the Internet, and special software such as that offered by Net2Phone. Because of the FCC's access charge exemption currently in place, neither local company would be permitted to collect any access charges for providing the local network portion to make this call. But if the same ISP were now connected to a CLEC in Phoenix, then the Qwest end user's call to Chicago would be first sent to a Phoenix CLEC and then handed off to the ISP by the CLEC for routing to Chicago.

If local reciprocal compensation were imposed, in addition to losing access revenues, Qwest, in this hypothetical example, would be obligated to pay this CLEC local reciprocal compensation for handing off the traffic. Not only has Qwest been unable to recover their costs from the ISP for an interstate call, but it then would be asked to *pay* local reciprocal compensation to another local provider for this interstate voice call. The recovery of expenses associated with local calls and interstate calls are very different. Expenses associated with providing local service, including local call termination charges, are traditionally recovered from the local providers' end user. Expenses associated with providing facilities for interstate usage are recovered from the long distance carrier through access charges who in turn presumably recovers this charge from its long distance customer.

The FCC's access charge exemption precludes recovery by Qwest and CLECs from the ISP. Qwest recognizes that this is the current state of the law and that as a local provider it must forgo this revenue source. The imposition of reciprocal compensation, a *local* call termination charge, on this interstate call, however, is contrary to traditional cost recovery. It is a second penalty for handling the ISP call for the end user customer. This solution may let one of the two local providers who have jointly participated in connecting this end user to his ISP recover some of its' expenses. But it does so at the detriment of the first local provider who now must not only exempt the ISP from any charges but must also pay the second local company's expenses that it was unable to collect from the ISP because of the ISP exemption.

Q. HOW SIGNIFICANT IS INTERNET USE?

A. Internet use in the United States is exploding. "Sell it on the Web" estimates that the number of PCs connected to the Internet jumped from 45 million at the beginning of 1998 to over 60 million in August 1998, an increase of 35%. A more recent survey of Internet use by Nielson/Netratings estimates over 130 million Internet users in June 2000. According to Nielsen, home use of the Internet had grown over 30% from 1998 to 1999. Over 40% of Internet users access the Internet from home, 26% from work, 16% from school and 18% from other locations. The expansion of Internet use in Arizona already produces a tremendous economic burden to Qwest and other local providers. Requiring reciprocal compensation on this traffic as well does not further any public policy goal for the ratepayer in Arizona.

Q. HOW DOES REQUIRING PAYMENT OF RECIPROCAL COMPENSATION ON ISP-BOUND TRAFFIC IMPACT BASIC RESIDENTIAL RATES?

A. The answer depends upon how much any given individual uses the Internet, but it is easy to see that reciprocal compensation payments can completely consume the revenues that an incumbent LEC receives from an individual customer through the flat monthly residential rate. In Arizona, for example, the Commission has set the monthly rate for basic residential service at $13.18. If an ISP subscriber uses the Internet for just one hour a day, the reciprocal compensation payments using the current combined tandem and end office rate of $.0028 from the Arizona cost docket will total about $5.04 per month, which is 38.2% of the current residential basic service rate in Arizona. If an ISP subscriber uses the Internet for three hours a day (for example, to shop, research, or play online Internet games), the reciprocal compensation payments would total about $15.12 and would more than consume the flat monthly rate for basic residential service. Imposing local reciprocal compensation on one way ISP-bound calls is clearly creating the wrong kind of incentive and will result in a problem that will not go away. Given the growth patterns in Internet traffic, as well as the projected growth of Voice over IP telephony, the problem will only get bigger.

[PROPRIETARY DATA BEGINS]

Q. SINCE BOTH QWEST AND THE CLECS OFFER CONNECTIONS TO ISPS SHOULDN'T THIS ISP-BOUND TRAFFIC SIMPLY BALANCE OUT?

A. No. The balance of traffic is more directly a function of the size of the customer base than where the ISPs reside. Assume Qwest has two million customers in Arizona and a CLEC has one thousand customers and the end users of both companies subscribe to AOL at approximately the same percentage, 20%. In such a case Qwest would have 400,000 customers calling AOL and the CLEC would have 200 customers calling AOL. This is the important number that impacts the public policy issue not where the ISP resides. It is the calls of the 400,000 customers that generate the costs. If AOL were connected to the Qwest switch Qwest's 400,000 customers would be handed off to the ISP at the Qwest switch. Qwest would incur originating access expenses but would be unable to collect access charges. The expenses of those 400,000 customers would be there of course. But Qwest would not owe any other party in addition for this traffic. If AOL were connected to the CLEC switch then Qwest's same 400,000 customers would go through the Qwest switch and then the CLEC switch to reach the ISP. If this Commission were to order reciprocal compensation on this ISP traffic the CLEC would bill Qwest for all the minutes that the CLEC collects and hands off to the ISP switch. Qwest would still incur the cost of originating 400,000 ISP-bound calls, but would now also owe a third party. This creates a huge financial incentive for CLECs to encourage ISPs to connect to their network. This is not just a hypothetical example. It is borne out by the actual traffic patterns that have evolved in the state of Arizona over the recent years. ISP-bound calls to CLECs from customers on Qwest's network for the year 2000 will be around minutes and ISP-bound calls from customers on CLEC networks to Qwest are projected to be around or about of the ISP-bound minutes going the other way. It is the customer base of end users that creates this distortion. Exhibit LBB-3 depicts the scenario of ISP call minutes being driven by percentage of customers making the calls. There is no "balancing out" of calls, minutes, or dollars paid for reciprocal compensation for ISP-bound traffic in Arizona. This long hold time, one way ISP-bound traffic, if included in reciprocal compensation, would result in huge transfers of dollars to CLECS. Using the minutes of use projected for 2000 and a call termination rate of $.0028[1] if ISP traffic were included in reciprocal compensation it could result in a payment of about to a small number of CLECs in Arizona on ISP-bound traffic received from customers on Qwest's network.

And based upon past history, if ISP-bound traffic were not excluded, this number would continue to grow at very rapid rates. The policy questions for this Commission is should this payment for ISP-bound traffic, be included in charges for local call termination, and would this multi-million dollar payment be considered a local cost incurred by the originating company, Qwest, to provide local service to its end users.

Q. WHAT IS THE EFFECT OF THIS DISPROPORTIONATE BALANCE OF END USERS ON TRAFFIC FLOWS?

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[1] This rate was established in the Arizona cost docket and reflects the current billing rate for local calls.

A. As set forth in exhibit LBB-3, Qwest measured almost minutes from January through August 2000 that were exchanged between Qwest and CLECs in Arizona. Of this total, over minutes were calls from customers on Qwest's network to CLEC customers and only minutes were calls from customers on CLEC networks to Qwest customers. To put this data into perspective, over of the traffic exchanged between Qwest and CLECs originated from a customer on Qwest's network and was delivered to a customer on a CLEC's network. The data further identified that over of the over minutes delivered to CLECs were ISP-bound minutes. This huge imbalance of traffic flow between companies is completely the opposite of the historic calling patterns of local telephone companies such as Qwest, or Citizens exchanging customer local calls in Arizona over the past several decades. Another compelling statistic is that, of over minutes of Internet use, Qwest identified less than telephone numbers that are associated with these minutes. These telephone numbers will receive almost minutes annually. These simple numbers bear out what is happening in Arizona with respect to ISP-bound traffic.

[PROPRIETARY DATA ENDS]

Q. WHAT OTHER IMPACTS WOULD RESULT IF THIS COMMISSION REQUIRES RECIPROCAL COMPENSATION FOR ISP-BOUND TRAFFIC?

A. My example above shows that if Qwest is required to pay "local" reciprocal compensation for ISP-bound traffic the compensation amount becomes a cost of providing local service in Arizona. Inevitably, the local Arizona end user, directly or indirectly, will be impacted by these increased costs. These costs should not be borne by end users, especially those who do not use the Internet, to pay a CLEC for passing ISP-bound traffic to a website. The windfall of reciprocal compensation that CLECs, ISPs and their customers would gain through reciprocal compensation would come at the expense of others. Someone must pick up the tab. Excluding ISP-bound traffic from reciprocal compensation will at least allow each local provider to bear the expense of its own customer's Internet calls and not add additional charges by other local providers.

Q. WHAT DOES QWEST RECOMMEND REGARDING THIS RECIPROCAL COMPENSATION ISSUE?

A. First, this Commission should find that Internet traffic is predominately interstate traffic, and is not local traffic. Second, as a public policy matter the Commission should reaffirm its earlier decision in the Sprint arbitration that it is not in the interest of the Arizona ratepayer to include this traffic in local reciprocal compensation payments. Third, this Commission should address the treatment of this issue in existing Arizona interconnection contracts.

CONCLUSION

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. My testimony describes why this commission should clearly and unequivocally reaffirm its earlier decision that local companies are not required to pay reciprocal compensation to other local companies for ISP-bound traffic. The FCC has made it clear that ISP-bound traffic is interstate in nature. The recent growth in long distance voice calls over the Internet only confirms this. Requiring the payment of reciprocal compensation on ISP-bound traffic is both illogical and counter to the public policy goals of increasing local competition. Including such payments is contrary to public policy objectives. The benefits gained by CLECs, ISPs and their customers, through reciprocal compensation subsidies, come at the expense of Qwest's residential and business customers that may or may not generate any Internet traffic. For the reasons stated above, the ISP exclusion from local reciprocal compensation proposed by Qwest should be adopted.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

BEFORE THE ARIZONA CORPORATION COMMISSION

CARL J. KUNASEK
CHAIRMAN
JIM IRVIN
COMMISSIONER
WILLIAM A. MUNDELL
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO U S WEST COMMUNICATIONS, INC'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	**DOCKET NO. T-00000A-00-0194**

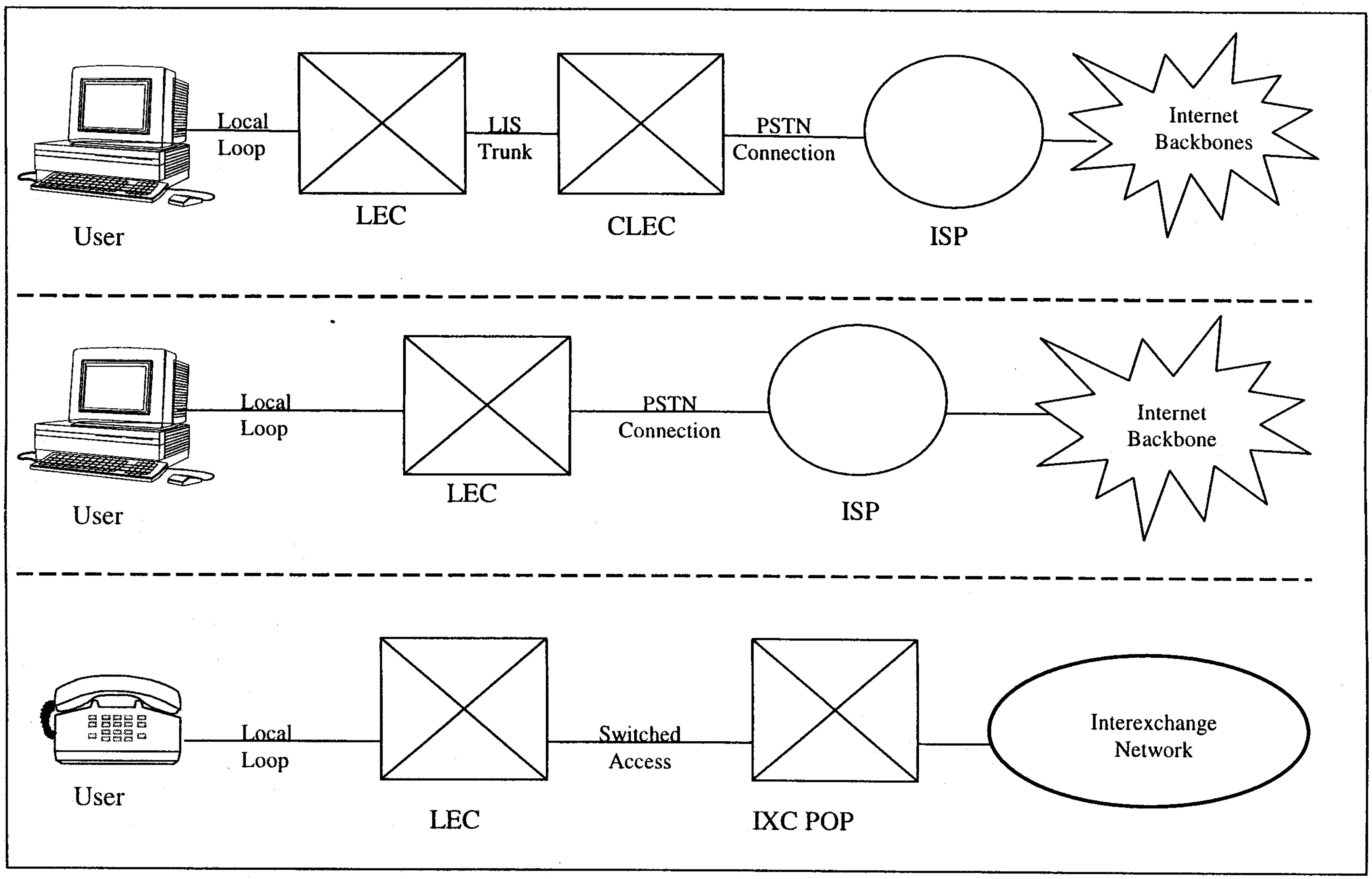
EXHIBIT OF

LARRY B. BROTHERSON

QWEST CORPORATION

OCTOBER 11, 2000

ISP Traffic Is Analogous to Access Traffic



IMBALANCE OF TRAFFIC

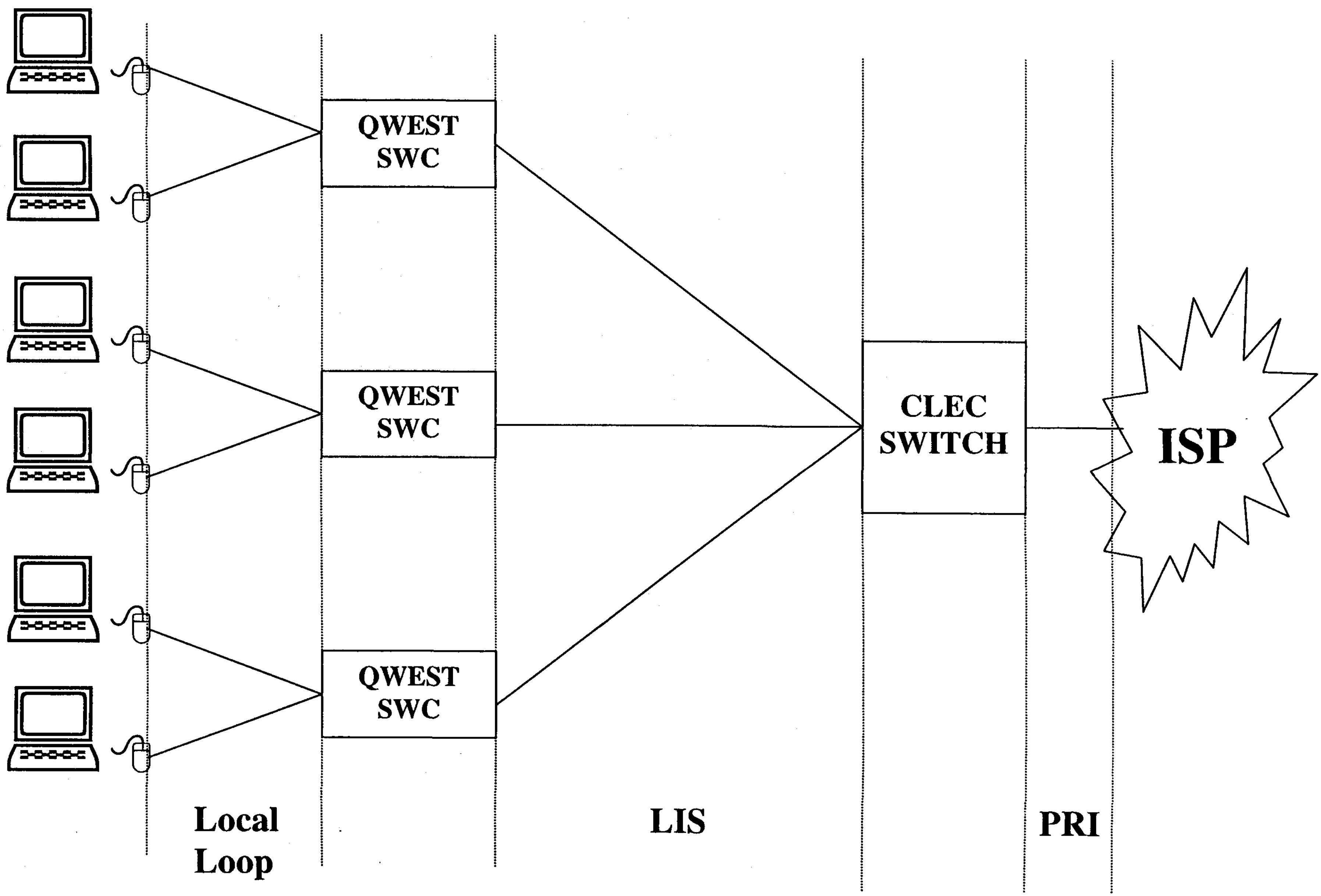


Exhibit LBB-3 pages 1-3 are proprietary.

BEFORE THE ARIZONA CORPORATION COMMISSION

CARL J. KUNASEK
CHAIRMAN
JAMES M. IRVIN
COMMISSIONER
WILLIAM A. MUNDELL
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)))))))	DOCKET NO. T-00000A-00-0194

DIRECT TESTIMONY OF

WILLIAM L. FITZSIMMONS

QWEST CORPORATION

October 11, 2000

TESTIMONY INDEX

I. INTRODUCTION AND PURPOSE OF TESTIMONY

Q. PLEASE STATE YOUR NAME AND POSITION.

A. My name is William L. Fitzsimmons. I am a Director at LECG; my business address is 2000 Powell Street, Suite 600, Emeryville, CA 94608.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL QUALIFICATIONS.

A. I hold a Ph.D. in Resource Economics from the University of Massachusetts, Amherst. My industry experience prior to joining LECG in 1994 includes two years of modeling demand for private line services for AT&T in New Jersey and six years as an economist and financial modeler for BellSouth in Atlanta. At LECG, my work is focused on the economic analysis and financial modeling of telecommunications issues.

During the past several years I worked extensively advising telecommunications companies on the construction of forward-looking cost models and testified in numerous regulatory proceedings on cost models and economic policy issues. I also developed financial simulation models of incumbent local exchange providers and entrants for presentation to regulators and for internal use by incumbent telecommunications providers in the United States, Canada, and Australia. My curriculum vita is attached as Exhibit WLF-1.

Q. WHAT IS THE PURPOSE AND STRUCTURE OF YOUR TESTIMONY?

A. My testimony describes the economic issues related to setting the price for dedicated use of the high-frequency spectrum of a copper loop. By defining the high-frequency spectrum on a loop as an unbundled network element (UNE), the Federal Communications Commission (FCC) has created a pricing conundrum that does not lend itself to resolution using the total element long-run incremental cost (TELRIC) approach used in arbitrations and cost dockets over the past several years. Spectrum on a loop was declared a UNE, but it is a different kind of UNE. Establishing cost-based prices for distinct physical elements is a difficult process, but at least physical elements lend themselves to systematic cost modeling. UNEs created by advances in electronics and sharing existing physical networks do not readily lend themselves to systematic cost modeling.

In **Section II, One Loop – Two Dedicated Connections**, I describe the dedicated nature of the loop and highlight the fact that although there are two connections on a shared line, both of those connections are dedicated to a single customer. Either connection, on its own, requires the loop, whether or not it is ever used by the customer. This fact has important implications for cost-based pricing of the high-frequency spectrum on a loop. The loop cost is caused by the dedicated nature of the connections to the end user, not by how the connections are used.

Section III, Line Sharing and TELRIC, describes how line sharing renders TELRIC nearly useless for determining the portion of the loop cost to allocate to the high-frequency spectrum UNE. When a line is shared between two dedicated uses, all, or nearly all, of the loop costs are common to these two uses. As stated by nineteenth century economist John Stuart Mill:

> "It sometimes happens that two different commodities have what may be termed joint cost of production. They are both products of the same operation...and the outlay is incurred for the sake of both together, not part for one and part for the other. The same outlay would be incurred for either of the two, if the other were not wanted

or used at all."[1]

This statement is as true today as it was over one hundred years ago. It is a very good description of a cost that is common to two jointly produced commodities or, in this case, two dedicated connections provided on one loop. When a line is used to provide two dedicated connections, these connections are jointly provided, and the underlying loop costs are common to both. In the context of this proceeding, joint costs are costs that are common to the subset of two dedicated connections on a shared line. The FCC and this Commission recognize that a cost-based price for a UNE should include a reasonable allocation of joint and, in a broader sense, common costs.

The guiding rationale for the FCC's pricing guidelines is that prices based on forward-looking costs, including reasonable allocations of joint and common costs, best simulate competitive prices and are, therefore, most conducive to the development of efficient competition. To promote the continued development of a competitive local telecommunications market, it follows that a reasonable allocation of joint loop costs provides the appropriate basis for pricing the high-frequency spectrum UNE. The challenge is to allocate a reasonable portion of the joint loop costs on a shared line for recovery by the price of the high-frequency spectrum UNE.

Section IV, The Critical Role of Pricing, describes principles that are relevant to allocating a portion of joint loop costs for recovery by the price of the high-frequency spectrum of a loop. The overriding principle is that the regulated price for the high-frequency spectrum UNE should attempt to replicate the price that

[1] Mill, John Stuart. "Principles of Political Economy," Longmans, Green and Co., 1929 (First Edition 1869), pp. 569-570.

could prevail in a competitive local telecommunications market. This is the price that will comport with the ongoing development of local telecommunications competition in Arizona. It will also provide the opportunity for the market to reveal the competitive price for the high-frequency spectrum on loops.

Competitive markets set prices for jointly supplied products. It is a matter of good economics and sound business practice that a competitive firm would not give away the high-frequency spectrum on its loops without expecting something in return. At its core, any proposal which holds that Qwest should not be compensated for its productive asset is inequitable and contrary to the spirit of competition. In a competitive telecommunications market, companies such as Rhythms could not expect to get something of value for nothing.

Furthermore, Qwest is not the only readily available source of the high-frequency spectrum on copper loops. The full spectrum of the UNE loop (i.e., an unbundled loop) is available to all competitive local exchange carriers (CLECs) and data local exchange carriers (DLECs) at regulated wholesale rates. Both CLECs and DLECs are free to lease an entire loop and sublease either the high or low-frequency spectrum portion to the other. The same result could be obtained through joint ventures between CLECs and DLECs. It is within such a free market that a competitive price for the high-frequency spectrum on loops can develop. A very low or zero regulated price for this UNE will preclude the development of a market price for this loop spectrum.

Finally, pricing should not favor one competitor over another or one method of providing a service over another. Just as technology has created the ability to provide high-speed access on the high-frequency spectrum of the loop, it is creating alternative modes of high-speed access, such as cable modem and broadband wireless services. Setting a low price for the high-frequency spectrum on a loop may stimulate short-term consumer benefits by increasing the activity of DSL providers, but a low price may also lead to long term effects of deterring facilities-based investments in competing technologies and restricting capital formation by the incumbent local exchange carrier. In an ongoing proceeding in Texas, a witness for one of the nation's leading CLECs explained that a low price for this UNE will discriminate against facilities-based CLECs by giving other competitors a "free ride" on the loop.[2]

Q. WOULD YOU PLEASE SUMMARIZE THE RECOMMENDATIONS YOU OFFER IN YOUR TESTIMONY?

A. First, I recommend that this Commission allocate fifty percent of the cost of an unbundled loop for recovery by the price for the high-frequency spectrum UNE.[3] Given that there are two dedicated connections on one shared line, the most reasonable solution is to allocate one-half of the loop cost for recovery by the price of the high-frequency spectrum UNE. This allocation represents a substantial discount from the full unbundled loop price; it makes a reasonable contribution to joint loop costs; and given the availability of unbundled loops at TELRIC-based prices, this price will act only as a price ceiling for competitors.

Second, when deciding the price for this UNE, I recommend that the Commission

[2] Turner, Steven. Prefiled Testimony on Behalf of AT&T Communications of Texas L.P. Before the Public Utilities Commission of Texas. Docket Nos. 22168 and 22469. Filed September 5, 2000, pp. 17-18.

[3] This recommendation is based on the most reasonable allocation of a portion of the shared loop cost to the high-frequency spectrum of the loop, as opposed to a determination of the fair market value for this spectrum. Clearly the high-frequency spectrum on a loop has value for the owner of the asset and other firms that use this spectrum to provide service.

recognize that: 1) on a shared line, the cost of the loop is a joint cost; and 2) TELRIC is nearly useless for allocating joint costs. The fact remains, however, that this UNE is a dedicated connection that uses the loop, and, together with the other dedicated connection on a shared line, it causes the loop cost. A cost-based price for use of this spectrum should, therefore, include recovery of a portion of the cost of the loop. I recommend that the Commission draw lessons from competitive markets and regulatory experience. Complicated arguments are not required to establish the fact that firms in competitive markets pay for the use of productive assets. The FCC, in its First Report and Order, recognized the need to add joint and, in the broader sense, common costs to TELRIC estimates to provide the basis for cost-based prices. The price for the unbundled loop set by the Arizona Corporation Commission includes an allocation of common costs.

Third, the provisioning of line sharing results in additional network and operational costs. Prices for UNEs should include the incremental facilities and operations costs caused by sharing the loop.

Fourth, when all of the evidence is presented, I urge this Commission to step back and consider what is best for the continued development of the local telecommunications competition in Arizona. Impacts from this pricing decision will extend far beyond DSL providers. This decision will influence the build-versus-lease decisions for all CLECs, the financial viability of facilities investments in cable modem and wireless broadband services, and Qwest's future investment decisions. The success or failure of DSL providers is just one of several concerns the Commission should consider in reaching its pricing decision. With a reasonable price for this UNE, the winners and losers will surface or sink based on their performances in the market.

II. ONE LOOP – TWO DEDICATED CONNECTIONS

Q. WHAT IS THE DISTINGUISHING COST CHARACTERISTIC OF THE UNBUNDLED LOOP?

A. The unbundled loops discussed in cost proceedings over the past several years are provided through the use of distinct, dedicated facilities. As such, the network of loops from incumbent local exchange carrier (ILEC) central offices to end users lends itself to systematic cost estimation techniques. Facilities required to provide a loop network can be identified; the forward-looking, recurring cost for these facilities can be estimated; and expenses can be attributed to loops based on the relationship between loop investment and overall investment. For costing purposes, loops are facilities that provide dedicated connections to customers, and, until the FCC declared the high-frequency spectrum on a loop an unbundled element, most of the costs associated with UNE loops were distinct from the costs of other UNEs. The TELRIC for providing an unbundled loop is a function of the cost of establishing a loop network and the number of loops provided to end users on that network. Non-dedicated uses of the loop, such as carrying toll calls, do not cause the cost of the loop.

Q. WHAT ARE THE COST IMPLICATIONS OF THE DEDICATED NATURE OF A LOOP?

A. The first principle of cost estimation is cost causation. Costs that are caused by the construction and maintenance of a loop should be attributed to the loop. These costs are not caused by the services that may or may not occur on a loop, such as switched access and toll usage; loop costs are associated with the dedicated nature of the loop itself. When a customer is connected to the network with a loop, this connection is available for the exclusive use of the customer. If the customer chooses not to use the connection, the connection is, nevertheless, always available. When a line is shared, it provides two dedicated connections for the exclusive use of the customer. Either connection, on its own, requires the loop, whether or not it is ever used by the customer. Even on a shared line, however, all loop costs are caused by the dedicated connections provided by the loop and not by non-dedicated uses of the loop.

Q. IS THE HIGH-FREQUENCY SPECTRUM ON A COPPER LOOP A DEDICATED CONNECTION TO A CUSTOMER?

A. Yes. In its recent Line Sharing Order, the FCC declared that one loop can actually comprise dedicated connections from a customer to two different service providers.[4] The ability to have two dedicated connections on one loop is a function of the marvel of electronics; there is no real-world analogy that hits the mark. Nonetheless, the high and low-frequency spectrums on a shared line are each dedicated for use whether or not the customer uses the loop. Although the high and low-frequencies are used on one loop, the spectrums are not shared. The high-frequency spectrum on a shared line is a dedicated connection between the DSL provider and its customer. The FCC recognized that, on any copper loop, only one provider will offer high-frequency access.[5]

[4] FCC 99-355, Third Report and Order, CC Docket No. 98-147, Released December 9, 1999, Executive Summary, Line Sharing – Unbundling Analysis. ("Line Sharing Order")

[5] Id., paragraphs 74-75.

Q. WHAT ARE THE COST IMPLICATIONS OF LINE SHARING?

A. Technology has made it possible to offer two dedicated connections on a single loop. At the present time, the loop can provide a dedicated voice connection and a dedicated data connection. In the near future the type of traffic on either of these connections can change. Covad Communications, for example, announced that it is on the brink of carrying voice and data traffic on the high-frequency spectrum of the loop. Regardless of how these connections are used, the important point for cost estimation is that the loop cost on a shared line is caused by two dedicated connections. Either connection, on its own, requires the loop, whether or not it is ever used by the customer. Assume that Mr. Jones moves into a new house and that his new line is a shared line on which Qwest and a DSL competitor each establish a dedicated connection. Which of these connections causes the cost of the loop? Perhaps Mr. Jones uses his wireless phone for his voice usage and is primarily interested in DSL for the wireline connection, or, conversely, he may need a wireline phone for voice usage and only subscribed to DSL as an afterthought. The truth is, the two connections jointly cause the cost of the loop. This Commission established the TELRIC of a loop. It must now determine a reasonable amount of this cost to allocate for recovery by the price of the high-frequency spectrum UNE on shared lines.

In summary, the underlying cost of loops does not change significantly because they support two dedicated connections. The change is that few of the loop costs on a shared line are attributable to a single dedicated connection. I return to the impact of this change in the following section.

III. LINE SHARING AND TELRIC

Q. WHAT RELATIONSHIP DID THE FCC ORIGINALLY ESTABLISH BETWEEN UNBUNDLED ELEMENTS AND TELRIC?

A. In its First Report and Order, the FCC made it clear that the prices for a UNE should be based on the element's TELRIC plus a reasonable share of joint and common costs.[6] The Arizona Corporation Commission approved UNE prices that are based upon the TELRIC methodology and include an allocation of common costs.[7]

Q. DOES THE FCC RECOGNIZE THAT LINE SHARING DOES NOT LEND ITSELF TO COST ESTIMATION USING THE TELRIC METHODOLOGY DESCRIBED IN ITS LINE SHARING ORDER?

A. Yes. In the Line Sharing Order, the FCC states that:

> "[W]e must extend the TELRIC methodology to this situation and adopt a reasonable method for dividing **shared loop costs**."[8] [emphasis added]

In truth, the TELRIC methodology breaks down under the conditions imposed by line sharing. In the FCC's words: "the TELRIC methodology that the Commission adopted in the *Local Competition First Report and Order* does not directly

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[6] FCC 96-325, First Report and Order, CC Docket Nos. 96-98 and 95-185, Released August 8, 1996, paragraph 29. ("First Report and Order")

[7] On July 18, 2000, the Eighth Circuit U.S. Court of Appeals issued its decision in Iowa Util. Bd. v. FCC, No. 96-3321 (8th Cir. , July 18, 2000) and vacated portions of the FCC's TELRIC pricing rules, including 47 C.F.R. 51.505(b)(1). While ultimately this decision could affect the prices of the underlying UNE loop and, therefore, affect the pricing for the HFPL, my conclusions in this testimony regarding the appropriate method for dividing costs between two dedicated uses of the loop are appropriate under the FCC's pricing rules both before and after the Eighth Circuit's decision.

[8] Line Sharing Order, paragraph 138.

address this issue."[9] In the FCC's own words, the issue is how to divide shared loop costs. In the context of TELRIC analysis, costs that are shared by two network elements are common to those elements and should be allocated to those elements. TELRIC analysis, however, was designed for estimating direct costs and does not offer a clear cut method for selecting the most reasonable allocation of joint and common costs. TELRIC provided the methodology for estimating the underlying cost of the loop. It does not offer a meaningful basis for selecting the most reasonable allocation of a portion of this cost for recovery by the price of the high-frequency spectrum UNE.

Q. WHAT IS THE IMPACT OF LINE SHARING ON THE AMOUNT OF JOINT COSTS ASSOCIATED WITH THE HIGH-FREQUENCY SPECTRUM UNE?

A. With the high-frequency spectrum designated as a UNE, most of the loop costs for shared lines are recast as joint costs. For the purpose at hand, joint costs are costs that are common to a subset of network elements or services. If there is only one dedicated customer connection, then this connection causes the entire cost. If there are two dedicated connections, then together these connections cause the cost of the loop. Providing two dedicated connections on one line drives the direct cost of the loop toward zero for either connection, leaving virtually all of the loop costs common to both.

Q. WHAT GUIDANCE DOES THE FCC PROVIDE REGARDING THE ALLOCATIONS AND RECOVERY OF JOINT AND COMMON COSTS?

A. In the First Report and Order, the FCC recognized that:

"Certain common costs are incurred in the provision of network

[9] Id., paragraph 138.

elements...**some of these costs are common to only a subset of the elements or services provided by incumbent LECs. Such costs shall be allocated to that subset, and should then be allocated among the individual elements or services in that subset, to the greatest possible extent**...Because forward-looking common costs are consistent with our forward-looking, economic cost paradigm, a reasonable measure of such costs shall be included in the prices for interconnection and access to network elements." [emphasis added][10]

The FCC recognized that costs that are common to a subset of elements or services (i.e. joint costs) should be allocated to that subset. It is necessary, therefore, to determine a reasonable allocation of a portion of the joint loop cost on a shared line for recovery by the price of the high-frequency spectrum UNE.

Q. WHEN LINE SHARING RECASTS THE LOOP COSTS AS A JOINT COST, HOW SHOULD THIS COMMISSION CONSIDER THE COST-BASED PRICE FOR THE HIGH-FREQUENCY SPECTRUM UNE?

A. This Commission is now faced with the challenge of allocating a portion of the joint loop cost on a shared line for recovery by the price for the high-frequency spectrum UNE. The costing portion of this exercise includes the recognition that the price of this UNE should recover a portion of the underlying loop cost.[11] There is no single "correct" allocation of joint and common costs. In setting the cost-based prices for other UNEs, this Commission adopted what it deemed the most reasonable method of allocating common costs to the UNEs. Now the

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[10] First Report and Order, paragraph 694.

[11] The price of this UNE or other UNEs should also recover costs that are incremental to line sharing with a DSL competitor (such as OSS, splitters, and line conditioning costs).

Commission is faced with allocating a reasonable amount of joint loop costs to the high-frequency spectrum UNE. This is a practical problem, much as it was with the allocation of common costs to other UNEs. It is necessary to seek the most reasonable solution. The key question is: Given the cost of an unbundled loop and the incremental cost of line sharing, what price is consistent with the competitive solution and furthers the goals for pricing unbundled elements? The answer is that the price should be based on the most reasonable allocation of the joint loop cost. A zero, or near zero, allocation of joint and common costs is clearly not the most reasonable allocation.

Q. CAN YOU EXPLAIN WHY AN XDSL PROVIDER USING ONLY THE HIGH-FREQUENCY SPECTRUM MAY CAUSE HIGHER COSTS THAN COMPETITORS THAT USE ALL OF THE LOOP?

A. A DSL provider that chooses to use only the high-frequency spectrum on a loop causes incremental costs that are not caused by competitors that use all of the loop. These costs are not related to the cost of the underlying loop. For all of the reasons described above, users of the high-frequency spectrum on a loop should contribute to the cost of the loop. In addition to the cost of the loop, however, it is my understanding that xDSL providers that lease <u>only</u> the high-frequency spectrum of the loop, cause incremental costs associated with dividing the loop between two service providers. These incremental facilities and operations costs are discussed by Qwest witnesses Terri Million, Robert Hubbard, and Barbara Brohl. The fundamental principle of cost causation dictates attributing the incremental costs caused by leasing only part of the loop to the xDSL firms that cause these costs. Competitors that use all of the loop (including Qwest) do not cause these costs.

IV. THE CRITICAL ROLE OF PRICING

Q. WHAT ARE THE IMPLICATIONS OF EMERGING DSL COMPETITION FOR PRICING THE HIGH-FREQUENCY SPECTRUM UNE?

A. Given the escalating demand for high-speed access, the rapid evolution of multiple technologies to compete for this demand, and the certainty that technological change will continue apace, this Commission should adopt pricing policies that comport with the ongoing development of a competitive local telecommunications market in Arizona. The Commission need not regulate for the distant future; it only need realize that the rules it adopts now should fit smoothly into the developing competitive framework. If the Commission does not set a reasonable, cost-based price for the high-frequency spectrum UNE that comports with a competitive solution, harm to competition, efficiency, and investment in the telecommunications infrastructure will result.

Q. WHAT IS THE OVERRIDING CRITERION FOR DETERMINING THE PORTION OF THE SHARED LOOP COST TO ALLOCATE FOR RECOVERY BY THE PRICE OF THE HIGH-FREQUENCY SPECTRUM UNE?

A. The overriding principle for determining the portion of the shared loop cost to allocate for recovery by the price of the high-frequency spectrum UNE is that this allocation should replicate a competitive outcome to the greatest possible extent. A fundamental economic concept underlying the decision to transform local telecommunications into a competitive market is that competition will provide the proper incentives for more efficient investment and innovation. To achieve this transformation, the FCC mandated that ILECs make productive assets available to competitors at prices that simulate competitive conditions. Under the FCC's concept, prices developed under this methodology will lead to efficient investment decisions during the transformation to competition. In its First Report and Order, the FCC explained its rationale as it relates to CLECs as follows:

> "Because a pricing methodology based on forward-looking costs simulates the conditions in a competitive marketplace, it allows the requesting carrier [of unbundled elements] to produce efficiently and compete effectively, which should drive retail prices to their competitive levels."[12]

For the development of efficient competition, it is also necessary that UNE prices adequately compensate the ILEC that owns the asset. In the First Report and Order, the FCC recognized that this goal is also served by prices for UNEs that replicate competitive prices to the greatest extent possible. The FCC explained its rationale as it relates to the ILECs as follows:

> "The just and reasonable rate standard of TELRIC plus a reasonable allocation of the joint and common costs of providing network elements that we are adopting attempts to replicate…the rates that would be charged in a competitive market."[13]

In other words, to promote efficient investment, prices for unbundled elements should, from an economic viewpoint, replicate prices that would prevail in a competitive telecommunications market. A price for the high-frequency spectrum UNE that is out of sync with a price that would reasonably prevail in a competitive market will have a disruptive impact on local telecommunications services competition.

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[12] First Report and Order, paragraph 679.

[13] Id., paragraph 740.

Q. IN A COMPETITIVE TELECOMMUNICATIONS MARKET, WOULD YOU EXPECT THE PRICE OF THE HIGH-FREQUENCY UNE TO INCLUDE SOME CONTRIBUTION TO THE JOINT LOOP COST?

A. Yes. The norm in a competitive market is that a product, service, or productive asset that is in limited supply and that has a positive demand also has a positive price. The expectation of a positive price is even more pronounced when offering a productive asset for lease also precludes its use by the owner of the asset. In the case of the high-frequency spectrum UNE, leasing the UNE to a competitor also removes the potential for Qwest to use the high-frequency portion of the loop. In a competitive market, it is highly unlikely that any rational provider would give up its ability to provide service using the high-frequency spectrum on its loops without requiring compensation from the potential competitor that will use the spectrum. The strong expectation is, therefore, that a competitive firm would charge a positive price for the use of the high-frequency portion of the loop. I contend that if representatives from any firm were to request free use of productive assets from a firm that was not regulated, these representatives would be looked upon with incredulity. In a competitive market, DLECs could not get something of value for nothing.

Q. IS THERE A MEANS OF DIFFERENTIATING THE VALUE OF THE SERVICES THAT CAN BE CARRIED BY THE TWO USERS OF A SHARED LINE?

A. No. DLECs expect to offer dial tone and voice services on their dedicated connections with their customers. The following quote from Covad Communications supports this point:

> "When we founded the company in 1996, our original vision was to deliver combined voice and data solutions…and this successful trial

> demonstrates our ability to deliver innovative products in the market. We hold a leading position in data and we intend to maintain that leadership in DSL voice."[14] (Covad Press Release, 6/7/99)

Covad expects to provide voice and data services on the UNEs that it buys from Qwest. It may prove that the dedicated connection for high-frequency spectrum will provide far greater value than the dedicated connection for lower frequency use. It is clear, however, that there is no basis to presume that the market would value a dedicated connection for low-frequency use higher than a dedicated connection for high-frequency use. Given this fact, an allocation of 50 percent is the most reasonable.

Q IN THE EFFORT TO FOSTER AND PROTECT THE DEVELOPMENT OF EFFICIENT COMPETITION, IS IT NECESSARY TO RECOGNIZE THAT NOT ALL COMPETITORS ARE USING QWEST'S FACILITIES?

A. Yes. It is instructive to step back from the consideration of the dispute between Qwest and the "data"[15] local exchange carriers (DLECs) related to the price of the high-frequency spectrum UNE and consider the impacts of this proceeding on other broadband Internet access competitors, such as broadband wireless and cable modem service providers. If this Commission sets an unreasonably low price for the high-frequency spectrum UNE in an effort to assist DLECs, it may have a damaging impact on the otherwise beneficial development of alternative sources of broadband Internet access competition.

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[14] Covad Communications Company, Press Release: "Covad Successfully Executes Trials of Combined Voice and Data Over DSL", June 7, 1999.

[15] The term 'data' appears to be a misnomer, because some DLECs claim that they expect to use the high-frequency spectrum to provide voice services along with high-speed Internet access.

High-speed Internet access can be provided over wireless spectrum or spectrum on copper loops. For example, in May of this year Sprint launched broadband wireless service in Phoenix.[16] Providers choosing between these two mediums for high-speed Internet access must determine which spectrum to use to provide service to their customers. This decision will depend in no small part on the cost of the underlying assets, including spectrum. If both types of spectrum are sold at competitive prices, the market will determine the efficient uses of each. This would be non-discriminatory. Setting a price for copper spectrum that is below a level that would be reasonable in a competitive market will discriminate against the use of wireless spectrum.

Q. WILL A LOW OR ZERO PRICE DISCRIMINATE AGAINST FACILITIES-BASED LOCAL COMPETITORS?

A. Yes. In an ongoing proceeding in Texas, a witness for AT&T, one of the nation's leading CLECs, states that "a zero price for HFPL [high-frequency portion of the loop] is both anti-competitive and unjustified when viewed in the light of the entire telecommunications marketplace."[17] The importance of this statement is underscored by the fact that AT&T is a leading facilities-based CLEC and the nation's largest cable operator.[18] AT&T's witness, Mr. Turner, explains further that "a zero price for the HFPL permits the CLECs to bear no cost for one of the most important assets they utilize in providing their service."[19]

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[16] Sprint, Press Release: "Sprint Launches First Broadband Wireless Market in Phoenix", May 8, 2000.

[17] Turner, p. 16.

[18] AT&T acquired TCI in 1998 for an all-stock transaction valued at approximately $48 billion and MediaOne Group in 2000 in a transaction valued at $44 billion.

[19] Turner, p. 16

Mr. Turner describes four reasons why setting a non-zero price is important for the development of efficient competition. He points out correctly that a zero price for the high-frequency spectrum would discriminate:

1) against voice service in favor of Internet access;

2) against carriers who support universal service in favor of carriers who do not;

3) against circuit-switched technology in favor of DSL technology; and

4) against facilities-based competitors in favor of entrants who would "free ride" on a critical component of the network.[20]

For these reasons, Mr. Turner concludes that "setting a zero price for the HFPL will have long lasting negative impacts on the development of competition for this new technology."[21] I would add to Mr. Turner's list that a low, or zero, price for the high-frequency spectrum UNE would discriminate against the use of wireless spectrum in favor of copper spectrum.

Q. WILL ALLOCATING ANY OF THE LOOP COST TO THE HIGH-FREQUENCY UNE PRECLUDE THE DEVELOPMENT OF EFFICIENT COMPETITION?

A. No. Setting a price that replicates a reasonable price that could prevail in a competitive telecommunications market will promote, not preclude, the development of efficient competition.

Q. DO COMPETITIVE SELLERS OF PRODUCTS THAT ARE JOINTLY PRODUCED ALLOCATE COMMON COSTS TO EACH PRODUCT?

A. When competitive producers sell joint products, there is no need for them to

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[20] Turner, pp. 17-18

[21] Turner, p. 18

make an overt allocation of common costs. Dr. Kahn noted that:

> "[I]n competitive markets sellers do not price on the basis of 'imputed' common costs when those costs must be recovered either in the form of fixed customer charges or on the basis of what the respective services produced with the aid of the inputs will bear. Competitive parity would therefore require that both sets of rivals bear the same loop costs, each recovering them in either of those two ways—not that one set of rivals be totally exempted from them, as proponents of what is labeled 'line sharing' would have it."[22]

For a regulated firm, it is common for regulators to protect competitive neutrality by preventing the incumbent from using its market power to subject competitors to a price squeeze.

Q. WHAT IS A PRICE SQUEEZE?

A. A price squeeze involves the use of market power to reduce the margin between prevailing wholesale and retail prices to the point where the integrated seller has a substantial competitive advantage over retail competitors that are not integrated. In the case of line sharing, it is reasonable for the Arizona Corporation Commission to be concerned with ensuring that the incumbent does not use its market power to raise the wholesale price of the high-frequency spectrum above cost to the point that the margins between retail and wholesale prices for efficient competitors do not cover the costs (including reasonable return on investment) of providing the service. For Qwest's DSL offering, this is

[22] Reply Declaration of Alfred E. Kahn in Response to Second Further Notice of Proposed Rulemaking, CC Docket 96-98, June 10, 1999, pp. 15-16.

achieved by setting the price floor equal to the incremental cost of providing the service, including the portion of the common loop cost that it allocates to the high-frequency spectrum UNE. As explained by Qwest witness Terri Million, the price of Qwest's DSL offering passes this test with fifty percent of the loop cost allocated to the high-frequency spectrum UNE. [Million Direct, pp. 32]

Q. CAN A COMPETITOR FACE A "SQUEEZE" BETWEEN INPUT COSTS AND RETAIL REVENUES THAT IS NOT BASED ON THE USE OF MARKET POWER BY THE INCUMBENT PROVIDER OF THE WHOLESALE INPUT?

A. A competitor can face a "squeeze" any time its costs are greater than the costs of its competitors. In a market, such as the market for high-speed Internet access, where there are several approaches used to deliver service, a firm focused on one approach faces the risk that its competitors may achieve cost reductions that it cannot match. For example, if xDSL firms are able to obtain high-frequency spectrum UNEs for a very low price, it is foreseeable that the business plans of cable modem or broadband wireless firms will become significantly less attractive. If xDSL firms, with guaranteed low prices for high-frequency spectrum, lower their retail prices, cable modem and broadband wireless providers could experience a squeeze between revenues and costs. This effect would be the result of regulation that favors one group of competitors over others, rather than regulation that allows the market to search for the efficient solution. It would clearly not be the result of an exercise of market power by the supplier of inputs.

Q. WHAT PRICE DO YOU RECOMMEND THE COMMISSION ESTABLISH FOR THE HIGH-FREQUENCY PORTION OF THE LOOP?

A. Since UNE prices are designed to assist in the transition to a competitive market, the solution should replicate an outcome that would be reasonable in a competitive telecommunications market. Complicated arguments are not required to establish the fact that a competitive firm would not give away productive assets, especially to potential retail competitors, and especially when these competitors are poised to expand from high-speed Internet access into voice services over these same assets. It is also unlikely that all of the loop cost would be recovered by this UNE in a competitive environment. I recommend the practical solution of setting the price of the high-frequency spectrum UNE equal to 50 percent of the loop cost plus the incremental facilities and operations costs caused by sharing the loop. This allocation represents a substantial discount from the full unbundled loop price; it makes a reasonable contribution to joint loop costs; and it will promote entry by efficient competitors.

Q. WOULD A PRICE FOR THIS UNE EQUAL TO ONE-HALF OF THE COST OF THE LOOP SERVE AS A PRICE CEILING IN A COMPETITIVE MARKET?

A. Yes. Qwest is not the only readily available source of the high-frequency spectrum on loops. There are 38 active competitors collocated in Qwest's wire centers in Arizona, and 86 percent of Qwest's access lines are in wire centers where one or more of these competitors are already collocated. Over 75 percent of Qwest's access lines are in wire centers with three or more collocated competitors.

The full spectrum of the UNE loop (i.e., an unbundled loop) is available to all

CLECs and DLECs at regulated wholesale rates. Both CLECs and DLECs are free to lease an entire loop and sublease either the high or low-spectrum portion to the other. The same result could be obtained through joint ventures between CLECs and DLECs. The terms of arrangements between CLECs and DLECs will result from each side following its own financial incentives. In a competitive market, I expect that CLECs will attempt to lower the effective price they pay for loops by setting a positive price for use of the high-frequency spectrum, while recognizing that the price must be attractive to at least one qualified DLEC. DLECs will attempt to pay as little as possible for use of the high-frequency spectrum, given a recognition that other DLECs may be willing to pay a significant amount for the use of this spectrum. If this Commission sets the price of the high-frequency spectrum UNE at 50 percent of the price of the unbundled loop, the availability of unbundled loops and the free exercise of these incentives will enable a market for the high-frequency spectrum on loops to develop.

This is not true if the price of the high-frequency UNE is set too low. If, for example, the price is set at zero, the market for loop spectrum described above will not develop. There are many ways that a zero price for this UNE can preclude the development of a competitive price. Consider, for example, the situation in which DLECs set retail prices equal to their costs of serving ILEC customers, including a zero cost to them for use of the high-frequency spectrum on ILEC loops. At these retail prices, DLECs could not afford to pay for spectrum on CLEC loops, which would clearly forestall the development of a market price for the use of this spectrum. A regulated price of zero for use of the high-frequency spectrum UNE could also introduce another artificial barrier to the development of a market price. If DLECs pay for CLEC spectrum, they may reveal to this Commission that this spectrum does, indeed, command a positive price in the market. DLECs must consider the possibility that revealing a positive market price for this spectrum could motivate this Commission to increase the regulated price of the UNE. Finally, all other factors aside, a firm that can obtain a key asset for free from one source will be reluctant to pay a positive price to another supplier.

V. CONCLUSION

Q. WOULD YOU PLEASE SUMMARIZE YOUR FINDINGS AND RECOMMENDATIONS?

A. Line sharing introduces a number of new cost/price considerations. First, when a line is shared there are two dedicated connections on one copper loop. Loop costs are caused by the dedicated connections on loops. They are not caused by usage across these dedicated connections. On shared lines, loop costs are caused jointly by the two dedicated connections. TELRIC is only applicable to the estimation of direct costs; it does not apply to joint or common costs. TELRIC, therefore, offers little guidance for determining loop costs associated with the high-frequency spectrum UNE. Second, line sharing creates a layer of network and operational costs that need to be addressed and resolved in regulatory hearings. The price of UNEs related to line sharing should include a portion of the loop cost plus the incremental facilities and operations costs caused by sharing the loop.

The joint nature of loop costs on shared lines leaves this Commission with the difficult task of determining a reasonable allocation of the underlying loop cost to the high-frequency spectrum UNE. Some guidance is derived from competitive market solutions in roughly analogous situations. It is clear that competitive markets set prices for jointly supplied products. Further guidance is derived from regulatory experience over the past several years. This Commission recognized that prices for UNEs must allow the providing carrier to recover a reasonable allocation of joint and common costs. The FCC, in its First Report and Order, also recognized the need to add joint and, in the broader sense, common costs to TELRIC estimates to provide the basis for cost-based prices.

When all of the evidence is presented, I urge this Commission to step back and consider what is best for the continued development of a competitive local telecommunications market in Arizona. Impacts from this pricing decision will extend far beyond DSL providers. This decision will influence the build-versus-lease decisions for all CLECs, the financial viability of facilities investments in cable modem and wireless broadband services, and Qwest's future investment decisions. The success or failure of DSL providers is just one of several concerns the Commission should consider. With a reasonable price for this UNE, the winners and losers will surface or sink based on their performances in the market.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

BEFORE THE ARIZONA CORPORATION COMMISSION

CARL J. KUNASEK
CHAIRMAN
JAMES M. IRVIN
COMMISSIONER
WILLIAM A. MUNDELL
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	**DOCKET NO. T-00000A-00-0194**

EXHIBIT OF

WILLIAM L. FITZSIMMONS

QWEST CORPORATION

October 11, 2000

INDEX OF EXHIBIT

WILLIAM L. FITZSIMMONS

LECG
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Fax (510) 653-9898
E-mail: wlfitz@lecg.com

EDUCATION

Ph.D., Resource Economics, University of Massachusetts, Amherst, MA, 1986

Emphasis: econometrics, natural resource economics, microeconomics, project evaluation, and industrial organization

M.S., Resource Economics, University of Massachusetts, Amherst, MA, 1981

Emphasis: project evaluation, and economics of forestry

B.S., Economics, State University of New York at Stony Brook, NY, 1975

PRESENT POSITION

LECG, Emeryville, CA, December 1993 – present
Managing Director, Global Telecom Practice, July 2000 – present
Principal, January 1998 – June 2000
Senior Managing Economist, January 1997 – December 1997
Managing Economist, December 1993 – December 1996

- Construct financial simulation models for the analysis of telecommunications issues, including interconnection policies and competitive entry into the local exchange
- Analyze domestic and international telecommunications issues and provide expert witness testimony for regulatory proceedings and litigation
- Work with telecommunications clients to develop and improve cost models
- Assess impacts to telecommunications firms and competition from uneconomic or unlawful policies and practices
- Analyze and estimate costs related to use of the public rights of way by telecommunications firms

PROFESSIONAL EXPERIENCE

BellSouth Corporation, Atlanta, GA, January 1988 - December 1993
Senior Economist, April 1992 - December 1993
Corporate Economist, January 1988 - April 1992

- Applied the tools of economic, financial and quantitative analysis to the identification and solution of a broad range of business problems, and developed recommendations for use by senior management in making policy decisions
- Key role in building model of the telephone company that interconnects behavioral equations for capital spending, expenses, real revenues, regulation, and a production function
- Based on model output, formulated and presented policy recommendations and contingency plans to meet expected changes in BellSouth's business environment, such as more severe competition, alternative regulation, and investment in multimedia
- Assessment of potential impacts of wireless on traditional wireline and cellular services
- Analyzed corporate level impacts of prospective mergers and acquisitions
- Derived econometric model that is used to create capital spending targets for the Telco and explore network investment options
- Analyzed corporation's advertising and publishing business to assist with derivation of a new pricing strategy
- Estimated the financial impacts of proposed permutations of interstate price caps
- Provided financial modeling analysis for the tender and bid process for international investments

AT&T, Bedminster, New Jersey, June 1986 - January 1988
<u>Market Analysis and Forecasting</u>

- Developed econometric forecasting models for telecommunication services; identified direction and financial implications of customer migration among private line services; wrote principal components regression software; presented technical and theoretical papers and seminars

PAPERS FILED WITH REGULATORY AGENCIES

"Competition Report Using the Diagnostic Method for Assessing Competition;" delivered to the Staff of the Public Utilities Commission of Ohio; performed analysis and drafted report with Lori Lent on behalf of Ameritech Ohio, January 6, 2000.

Paper prepared for Telecom New Zealand titled "Review of Network Costing Model Used in Todd Telecommunications Consortium Report," by George Barker, William L. Fitzsimmons, Kieran Murray & Graham Scott dated December 2, 1998

"LECG Financial Simulation Model of Effects of FCC Policies on Large Local Exchange Carriers," by Dr. William Fitzsimmons, Dr. Robert Crandall, Professor Robert G. Harris, and Professor Leonard Waverman, Paper filed with FCC, August 1996

PRESENTATIONS AND REGULATORY PROCEEDINGS

Expert written testimony and cross-examination on behalf of U S WEST in line sharing price setting proceedings in 2000.

Minnesota (Docket No. OAH 12-2500-12631-2 and MPUC P-421/CI-99-1665)

Washington (Docket No. UT-003013, Part A)

Ex Parte with the FCC on behalf of Ameritech to discuss LECG's analysis of the FCC's Synthesis Model and proposed input values, July 13, 1999.

Joint reply affidavit with Debra Aron and Robert G. Harris on behalf of Ameritech filed with the FCC in the matter of implementation of the local competition provisions in the Telecommunications Act of 1996 (CC Docket No. 96-98); filed June 10, 1999

Expert affidavit on behalf of Ameritech filed with the FCC in the matter of implementation of the local competition provisions in the Telecommunications Act of 1996 (CC Docket No. 96-98); filed May 26, 1999

Expert written testimony and cross-examination on behalf of U S WEST in interconnection arbitration proceedings in 1997

South Dakota (Docket No. TC96-184),

Montana (Docket No. D96.11.200),

Wyoming (Docket Nos. 72000-TS-96-95 and 70000-TS-96-319),

New Mexico (Docket No. 96-411-TC),

North Dakota (Docket No. PU-453-96-497),

Idaho (Docket Nos. USW-T-96-15 and ATT-T-96-2), and

Colorado (Docket No. 96S-331T)

Participated in cost workshops on behalf of U S WEST with the Utah Division of Public Utilities and Minnesota Commission in 1996, 1997, and 1998

Expert written testimony and cross-examination on behalf of U S WEST in consolidated cost dockets in

Arizona (Docket Nos. U-3021-96-448, 1996),

Iowa (Docket No. RPU-96-9, 1997),

New Mexico (Docket Nos. 96-310-TC and 97-334-TC, 1998),

Minnesota (Docket Nos. P-442, 5321, 3167, 466, 421/CI-96-1540, 1998), and

Utah (Docket No. 94-999-01, Phase III, Part C, 1998)

Expert testimony and cross-examination in universal service proceedings on behalf of U S WEST in 1997 and 1998

New Mexico (Docket Nos. 96-310-TC, 97-334-TC),

Minnesota (MPUC Docket No. P-999/M-97-909),

Wyoming (General Order No. 81),

Idaho (Case No. GNR-T-97-22), and

Nebraska (Application No. C-1633)

Expert declarations in support of motions for summary judgment by U S WEST in Iowa (June 1997) and Washington (January 1998)

Presentation on "TELRIC Concepts and Applications," Basics of Regulation Conference, New Mexico State University Center for Public Utilities and the National Association of Regulatory Commissioners, Albuquerque, New Mexico, September 18, 1996

August 2000

BEFORE THE ARIZONA CORPORATION COMMISSION

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	**DOCKET NO. T-00000A-00-0194** **AFFIDAVIT OF WILLIAM L. FITZSIMMONS**
STATE OF CALIFORNIA	)	
COUNTY OF ALAMEDA	)	

William L. Fitzsimmons, of lawful age being first duly sworn, depose and states:

1. My name is William L. Fitzsimmons. I am a Director at LECG in Emeryville, California. I have caused to be filed written testimony and exhibits in support of USWC in Docket No. T-00000A-00-0194.

2. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge and belief.

Further affiant sayeth not.

William L Fitz

William L. Fitzsimmons

SUBSCRIBED AND SWORN to before me this 5th day of October, 2000, 2000.

Nancy P Adams

Notary Public residing at
Emeryville, California.

My Commission Expires: May 12, 2001

NANCY P. ADAMS
Commission # 1134695
Notary Public — California
San Francisco County
My Comm. Expires May 12, 2001

BEFORE THE ARIZONA CORPORATION COMMISSION

CARL J. KUNASEK
Chairman
JAMES M. IRVIN
Commissioner
WILLIAM A. MUNDELL
Commissioner

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	DOCKET NO. T-00000A-00-0194

DIRECT TESTIMONY OF

D. M. (MARTI) GUDE

QWEST CORPORATION

OCTOBER 11, 2000

TESTIMONY INDEX

EXECUTIVE SUMMARY

D. M. (Marti) Gude is employed by Qwest Corporation. In her position of Director - Cost Accounting, she is responsible for various regulatory and management accounting functions, including the preparation and analysis of embedded cost studies for purposes such as deregulation, cost accounting and regulatory filings.

Ms. Gude's direct testimony in this proceeding is responsive to resale discount issues remanded to the Arizona Commission as a result of the United States District decision in U S WEST v. Jennings, Case No. 97-26-PHX-RGS-OMP et al.

Her testimony provides the Commission with information needed to more accurately identify the cost savings attributable to various services and presents and describes Qwest's "Embedded" Avoided Cost Study. Her testimony sets forth the resale discounts the embedded study produces for five basic service groupings and provides recommendations for handling "packaged / special" services, "volume / term contract" services, and Operator Service/Directory Assistance services.

Ms. Gude's testimony discusses the relevant provisions of the Telecommunications Act of 1996 ("the Act") and emphasizes the competitive and economic importance of setting appropriate resale discounts. She also explains why the discounts and avoided costs must be calculated using only costs specific to Qwest's Arizona <u>intrastate</u> operations, not combined interstate/intrastate costs.

Ms. Gude explains that reliance on generic FCC proxy pricing guidelines, which have been vacated and remanded by recent United States Court of Appeals directives, would be inappropriate in this proceeding. She further explains why, in keeping with the spirit of Sections 251 (c)(4) and 252 (d)(3) of the Federal Act, the Commission should rely upon an avoided cost model which produces multiple resale discounts, rather than only a single composite resale discount.

The balance of Ms. Gude's testimony sets forth:

- descriptions of the avoided cost study methodologies, assumptions, procedures, exhibits, and resale discount results produced by the study;

- why ARMIS high level data and invalid FCC proxy guidelines cannot be used to calculate accurate resale discounts;

- why Qwest's cost data specific to Arizona intrastate retail telecommunication product offerings must be employed to calculate resale discounts in order to satisfy requirements of the Federal Act;

- the importance of excluding all costs associated with services that are not subject to resale from the calculation of the discounts;
- the FCC Part 32 USOA accounts that contain "retailing" costs and why entire account balances can not simplistically be considered totally avoided;
- why account, sub-account, balances must be carefully analyzed to determine the costs that will be avoided under the resale provisions of the Act;
- how Qwest identified avoided costs and why all costs that are part of intrastate retail rates, including network and general support related capital costs, must be included in the avoided cost analysis and discount calculations;
- why "recurring rate" resale discount calculations should exclude Non-Recurring charges and Operator Service/DA costs;
- why packaged services and non-basic special services should be separately addressed through the development and application of a composite discount;
- why volume/term contract services and Operator Service/DA service require separate avoided cost analysis; and
- a description of the Qwest embedded avoided cost study documentation and the study's results.

The product category results of the Qwest embedded avoided cost study are as follows:

Category	Service Description	Discount
Basic - 1	Basic Exchange Business	9.41%
Basic - 2	Toll	23.96%
Basic - 3	Listings, CO Features, & Informational Services	41.51%
Basic - 4	Basic Exchange Residence	4.19%
Basic - 5	Private Line	6.44%
Composite	Packaged/Special Services	10.46%

I. IDENTIFICATION OF WITNESS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is D. M. (Marti) Gude. My business address is 1314 Douglas-on-the-Mall, Omaha, Nebraska.

Q. PLEASE IDENTIFY YOUR EMPLOYER AND EXPLAIN YOUR POSITION AND RESPONSIBILITIES.

A. I am employed by Qwest Corporation, formerly known as U S WEST Communications, Inc. (U S WEST); my title is Director - Cost Accounting. I am responsible for various regulatory and management accounting functions, including the preparation and analysis of embedded cost studies for purposes such as deregulation, cost accounting and regulatory filings.

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE?

A. I received a Bachelor of Science degree in Business Administration with a major in Accounting, from the University of Nebraska - Lincoln and a Master of Business Administration (MBA) degree, with honors, from the University of Nebraska at

Omaha. I am also a Certified Public Accountant, certified in the State of Nebraska as an inactive registrant.

I was a member of the audit staff of Arthur Andersen & Company (AA&Co.) for four years prior to joining Qwest's predecessors (U S WEST, and Northwestern Bell) in 1979. My experience at AA&Co. included audits for companies in various industries, which included the issuance of opinions on financial statements. At Qwest, and its predecessors U S WEST and Northwestern Bell, I have held various positions in the Budget, Finance, Corporate Accounting and Cost Accounting departments. I have worked in the area of cost accounting since January 1986.

Q. HAVE YOU FILED TESTIMONY AND/OR TESTIFIED PREVIOUSLY ON THE SUBJECT OF COST DISTRIBUTION AND/OR COST ACCOUNTING?

A. Yes. Appendix A-1 of my testimony provides a chronological listing of the dockets/cases, by state, in which I have previously testified on the subject of embedded cost studies.

Q. HAVE YOU PARTICIPATED IN OTHER PROCEEDINGS INVOLVING THE IDENTIFICATION OF AVOIDED COSTS AND CALCULATION OF RESALE DISCOUNTS?

A. Yes, I have. Appendix A-2 of my testimony highlights the arbitration and embedded avoided cost dockets in which I have testified in connection with issues that relate to the determination of avoided costs and establishment of resale discounts.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to provide the Commission with information responsive to the resale discount issues remanded by the United States District Court in its decision of May 4, 1999.[1] My testimony provides the Commission with information needed to more accurately identify the cost savings attributable to various services and it presents and describes Qwest's "Embedded" Avoided Cost Study[2] for Arizona operations which I have included as Proprietary Exhibit DMG - 2 to my testimony. This study identifies the embedded costs for Qwest retail services that are avoided when the Company sells its retail telecommunications services on a wholesale basis to competitive local exchange carriers ("CLECs") and/or other

1 United States District Court for the District of Arizona - U S WEST v. Jennings, Case No. 97-26-PHX-RGS-OMP et al, pages 17 – 20.

2 For purposes of this testimony, references to Qwest Corporation (Qwest) shall encompass the historical operations of its predecessor U S WEST. In this filing, U S WEST 1999 pre-merger financial data is employed in the Qwest Avoided Cost Study. Although this data is referenced as Qwest data in this testimony, the Avoided Cost Study and Exhibits supporting this testimony reference pre-merger financial data as that of U S WEST.

resellers for resale.

My testimony discusses the attributes of the Qwest Embedded Avoided Cost Study and establishes that the study complies with the resale requirements of the Telecommunications Act of 1996 ("the Act"). I also explain how the Commission should be guided by the Act and Qwest's detailed cost records, and why it should not calculate discounts based on the proxy cost data as outlined in the now vacated and remanded FCC pricing rules.[3]

The discounts produced from Qwest's embedded avoided cost study are as follows:

Category	Service Description	Discount
Basic - 1	Basic Exchange Business	9.41%
Basic - 2	Toll	23.96%
Basic - 3	Listings, CO Features, & Informational Services	41.51%
Basic - 4	Basic Exchange Residence	4.19%
Basic - 5	Private Line	6.44%
Composite	Packaged/Special Services	10.46%

III. GENERAL RESALE DISCOUNT ISSUES

Resale Requirements Of The Telecommunications Act Of 1996

3 United States Court of Appeals decision in case No. 96-3321 dated July 18, 2000, at pages 16 - 18 vacated and remanded FCC rule 47 C. F. R. § 51.609(b).

Q. WHAT REQUIREMENTS ARE SET FORTH IN THE TELECOMMUNICATIONS ACT OF 1996 REGARDING THE ESTABLISHMENT OF RESALE DISCOUNTS?

A. The Act requires setting resale discount rates for retail telecommunications services based upon an analysis of the costs inherent in the rates being discounted.

Section 251 (c)(4)(A) of the Act requires telecommunications carriers acting in the capacity of a local exchange carrier, such as Qwest:

> "… to offer for resale at wholesale rates any telecommunications service that the carrier provides <u>at retail</u> to subscribers who are not telecommunications carriers." (Emphasis added).

Section 252 (d)(3) of the Act states:

> "A state Commission shall determine wholesale rates <u>on the basis of retail rates</u> charged to subscribers for the <u>telecommunications service</u> requested, <u>excluding the portion thereof</u> attributable to any marketing, billing, collection, and other costs that will be avoided by the local exchange carrier." (Emphasis added).

As this language demonstrates, the Act requires that the wholesale rates must be based on "retail" telecommunications service rates, which means that the discounts must be calculated using only costs that are part of those retail rates. Therefore, in determining which costs Qwest will avoid when selling services on a wholesale basis, only costs that are part of the retail rates can be treated as avoided costs. Thus, the process for calculating the discounts is relatively straightforward: it requires identifying all the costs that make up Qwest's retail telecommunications services rates and determining which of those costs Qwest will avoid.

Importance Of Appropriate Resale Discounts

Q. WHY IS IT IMPORTANT FOR THE COMMISSION TO ESTABLISH ACCURATE RESALE DISCOUNTS IN THIS PROCEEDING?

A. The level of resale discounts can have a far-reaching impact on the development of the telecommunications infrastructure and the promotion of capital investment in Arizona. During recent years, Qwest has continued to invest significant capital to grow and maintain its network infrastructure in Arizona, an infrastructure that competitive entrants may now readily use. In replacing Arizona's existing, proxy based, wholesale discounts, resale discounts in this proceeding must not be set too high, or the incentive for competitive entrants to make their own capital investments in Arizona will be diminished. Competitive entrants will merely resell Qwest's products and services, relying on Qwest to support the telecommunications infrastructure and bear the risk of investment. In addition, if the Commission sets resale discounts too high, Qwest will be deprived of the compensation it requires to fund capital investments that are to be used to provision retail, and resale, telecommunications services. At the same time, the Commission should not set the discounts too low, that is, below Qwest's avoided costs, since that would discourage resale competition.

The Commission's resale discount decisions in this proceeding establish the economic framework necessary for maintaining and advancing Arizona's telecommunications infrastructure. Therefore, the Commission's decisions: (1) should conform to the provisions and intent of the Act; that is, they should foster facilities-based competition, as well as resale competition and, (2) they should not force Qwest to bankroll its competition through erroneously high, contaminated, and/or distorted resale discounts.

Reliance On FCC Guidelines

Q. DID THE FCC ATTEMPT TO PRESCRIBE CERTAIN RESALE DISCOUNT METHODOLOGIES IN ITS FIRST INTERCONNECTION ORDER, RELEASED ON AUGUST 8, 1996?

A. Yes. In that Order, the FCC described two methods for determining resale discounts. The preferred method required state commissions to determine resale discounts from a Company's detailed avoided cost studies.[4] In the alternative, and absent such studies, the FCC prescribed its own very broad, generic, default guidelines, which were to be used only on an interim basis until detailed studies were made available.

4 FCC 96-325 The First Report & Order in the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Section VIII. Resale, at para. 908.

In addition, the FCC promulgated rules in 47 C. F. R. § 51.607 and 51.609(b) dealing with the definition and identification of "avoided retailing costs".

Q. WHAT RELIANCE SHOULD THE COMMISSION PLACE ON THE FCC'S FIRST INTERCONNECTION ORDER AND ITS PRESCRIBED GENERIC AND PROXY GUIDELINES REGARDING AVOIDED COSTS AND RESALE DISCOUNTS?

A. A recent United States Court of Appeals decision concluded that the FCC's directives must be vacated and remanded. Thus, the FCC's generic avoided cost guidelines, data and default proxy discount must not be relied upon in this proceeding for determining avoided costs and setting resale discounts for Qwest's retail telecommunications services.

In rendering its findings, the Appeals Court stated that the language of 47 U.S.C. § 252(d)(3) is clear. That is, wholesale rates shall exclude costs that will be avoided by the local exchange carrier. The Court stated that:[5]

> " The plain meaning of the statute is that costs that are actually avoided, not those that could be or might be avoided, should be excluded from the wholesale rates."

The Court also found that:

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5 United States Court of Appeals decision in Case No. 96-3321, dated July 18, 2000, at page 17.

> "The statute recognizes that the ILEC will itself remain a retailer of telephone service with its own continuing costs of providing that retail service. The FCC's rule treats the ILEC as if it were strictly a wholesaler whose sole business is to supply local telephone service in bulk to new purveyors of retail telephone service. Under the statute as it is written, it is only those continuing costs of providing retail service which will be avoided by selling to the competitor the services it requests which are to be excluded. The FCC's rule is contrary to the statute."

Given the Appeals Court's directives, it would be inappropriate to perpetuate the use of outdated, generic, FCC avoided cost definitions, avoided cost proxy assumptions or cost study results. Rather, the Arizona Commission should rely upon a detailed, Arizona specific, avoided cost study that follows the parameters of § 252(d)(3) of the Act. Therefore, the Commission should rely upon the avoided cost information provided by Qwest in its avoided cost study filed in this proceeding.

Avoided Cost Study Data

Q. CAN APPROPRIATE DISCOUNTS FOR QWEST RETAIL TELECOMMUNICATIONS SERVICES BE DETERMINED WITHOUT EMPLOYING DETAILED COMPANY COST INFORMATION?

A. No. Detailed cost data specific to Qwest's Arizona retail telecommunications services are essential. Without these data, reliable resale discounts for Qwest's Arizona specific operations cannot be determined. This is precisely why Qwest's embedded resale discount study is based on detailed cost information, not theoretical and broad-based FCC proxy guidelines or non-Qwest specific costs and assumptions, as were reflected in the FCC's First Report and Order and the discount models of AT&T and MCI reviewed by the Arizona Commission in setting Arizona's existing resale discounts.

I would also reiterate that even the FCC originally realized the importance of using company and state-specific data. In its Order, the FCC stated:

> "... state Commissions must establish wholesale rates <u>based on avoided cost studies</u> within a reasonable time."[6] (Emphasis added).

Q. DOES THE LEVEL OF DATA EMPLOYED IN QWEST'S EMBEDDED AVOIDED COST STUDY PROVIDE FOR THE DEVELOPMENT OF APPROPRIATE RESALE DISCOUNTS?

A. Yes. Qwest's study recognizes that retailing costs avoided in the resale environment can most accurately be determined from detailed Qwest - Arizona data. The Company's embedded study also recognizes that development of product category discounts is very important since Qwest's services offered in Arizona vary significantly in the amount and proportion of operating expense and capital investment cost required to provision these services. Stated another way, each Qwest basic service category has unique cost characteristics.

As the Federal Act requires, the Commission should focus on a detailed study that begins with the analysis of Qwest – Arizona operating costs in order to determine the retailing costs that are inherent in Qwest's retail telecommunication service rates. Using detailed Company records, Qwest's embedded avoided cost study facilitates the calculation of separate discounts for multiple service category groups. These service groups encompass the telecommunications services that Qwest will offer for resale. The service category discount methodology recommended by Qwest recognizes similarities and dissimilarities of its basic services. It also balances service group cost differences with administrative issues and purchase alternatives afforded to customers, resellers, and facilities-based competitors.

For example, Basic Residential service is very capital intensive and has very little avoided "retailing" costs. Therefore, it should receive a lower discount than Basic Business service or Central Office Features, both of which rely more heavily on retail marketing efforts. A service such as Toll, which can be self-provisioned by facilities-based competitive entrants, should have a separate discount so that it does not residually impact or contaminate other resale discounts for basic services more likely to be purchased by resellers. Additionally, some services offered by Qwest are sold as

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6 FCC 96-325 The First Report & Order in the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Section VIII. Resale, para. 909, 910 and 932.

"packaged services" (e.g. CustomChoice™[7]). To accommodate packaged / special services and ease discount administration issues for such offerings, Qwest's study derives a blended/composite discount.

Reliance On A Multiple Discount Model

Q. WHAT LEVEL OF DISAGGREGATION CURRENTLY EXISTS IN ARIZONA'S EXISITING RESALE DISCOUNTS ESTABLISHED AS A RESULT OF EARLIER PROCEEDINGS AND DECISIONS?

A. Two resale discounts are currently employed in Arizona. In its previous review of wholesale discounts, the Commission established a 12 percent discount for Basic Residence Service and non-recurring charges and an 18 percent discount for most other retail telecommunications services offered by Qwest in Arizona.[8]

Q. DOES THE LANGUAGE OF THE ACT SUPPORT USING A MODEL THAT FURTHER DISAGGREGATES AND CALCULATES MULTIPLE DISCOUNTS INSTEAD OF A SINGLE, COMPOSITE DISCOUNT?

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7 CustomChoice, a Registered Trademark of Qwest Corporation's parent.

8 A.C.C. Decision No. 60635 Order (1-98) Arizona Corporation Commission 1996 Consolidated Docket No. U-3021-96-448 et al.

A. Yes. Unique category discounts are in keeping with the spirit and the express language of the Act. The language of the Act refers to wholesale and retail rates, using the plural, not the singular. Section 252(d)(3) states:

> "[A] State commission shall determine wholesale rate<u>s</u> on the basis of retail rate<u>s</u> charged to subscribers for the telecommunications service requested, <u>excluding the portion thereof</u> attributable to any marketing, billing, collection, and other costs that will be avoided by the local exchange carrier." (Emphasis Added).

This statement contemplates that resellers will avail themselves of more than one service and, therefore, a variety of rates/service categories. As a result, retail services and their associated costs must be analyzed. Nothing in the language of the Act suggests that a single, composite discount should be created and applied indiscriminately to all of Qwest's retail services or rates. Even the FCC noted in its Order and agreed that:

> "… avoided costs may, in fact, vary among services. Accordingly, we allow a state to approve non-uniform wholesale discount rates, as long as those rates are set on the basis of an avoided cost study that includes a demonstration of the percentage of avoided costs that is attributable to each service or group of services."[9]

The Commission should not be swayed by inadequate and overly "simplified" studies routinely sponsored by resellers in proceedings such as this, which produce only a single composite discount. These studies are inappropriate, since Qwest's underlying costs and avoided costs vary from service to service and thus, the unique cost characteristics of each service are not properly accounted for in a single, composite discount. In addition, the averaging of discounts to form one composite discount allows CLECs to engage in a form of improper rate arbitrage, as it gives them the ability to purchase only those services whose individual discounts would actually be lower than the composite or average discount they would receive. If CLECs purchased only those services, and not the services whose individual discounts would actually be higher than the composite discount, they will benefit improperly and Qwest will not recover its operating costs.

• **<u>Reliance On A Multiple Discount Model - Basic Telecommunications Services</u>**

Q. PLEASE EXPLAIN FURTHER THE ARBITRAGE OPPORTUNITIES THAT ARISE FROM USE OF A SINGLE, COMPOSITE DISCOUNT INSTEAD OF DISCOUNTS FOR UNIQUE BASIC SERVICE PRODUCT CATEGORIES.

A. As discussed above, the use of a single, composite discount for basic services inherently creates a subsidy from services not purchased or from the services with higher actual avoided costs, to services purchased for resale that have lower actual avoided costs. For example, in Qwest's case, this means that Qwest's Basic Residence Service, which has a calculated avoided cost discount of only 4.19%, would instead receive the composite discount of 10.46% - implying a 150% higher level of avoided costs for Basic Residence Service than actually exists. This

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9 FCC 96-325 The First Report & Order in the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Section VIII. Resale, para. 916.

additional form of implicit subsidy is contrary to the Act and FCC Order to make all subsidies explicit.[10]

Theoretically, this difference could be made up through the resale of services with discounts greater than the composite discount percentage. But, in actuality, this will not occur unless resellers purchase all retail services, and in the same proportionate quantities, as Qwest sells in its existing retail business. This is highly unlikely since resellers are not legally bound to buy services in any particular quantities or proportions. In fact, some resellers have already indicated or demonstrated their intention to self-provision some services, such as Operator Services/DA or Toll, or that they are or will be focused on targeting high-end business customers, rather than the basic rural residential customers of Qwest.

Facilities-based providers and niche resellers can pick and choose the Qwest services they will resell, combining such services with their own. In this environment, the arbitrage facilitated by a single, composite discount would not be in compliance with the provisions of the Act, since the rate reduction resulting from a single resale discount would not correspond with the avoided costs inherent in the various Qwest rates for reseller selected basic services. Given the number and types of resellers, and the options available to each, a one-size fits-all discount is not

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10 See 47 U.S.C. § 254 and FCC Docket 97-157, Report And Order CC Docket No. 96-45, para. 17.

appropriate to apply to all Qwest services and does not comport with the resale provisions of the Act.

Q. IN ADDITION TO FIVE BASIC SERVICE PRODUCT-CATEGORY DISCOUNTS, DOES THE QWEST EMBEDDED AVOIDED COST STUDY ALSO PRODUCE A COMPOSITE DISCOUNT?

A. Yes. Qwest's embedded study produces five basic service product category discounts as well as a blended, or aggregate composite discount. In keeping with the provisions and intent of the Act, Qwest supports the development and application of product category resale discounts for its basic services. However, the compilation of a composite discount may be useful in certain situations where the application of one of the five basic service discounts would be inappropriate.

Additionally, the development of a composite discount in the Qwest Embedded Avoided Cost Study provides for a general reference and comparison to the single composite discounts typically produced in high level studies developed by resellers.

Q. IN WHAT SITUATIONS SHOULD THE USE OF A COMPOSITE DISCOUNT BE CONSIDERED?

A. Use of a composite discount should be considered as a means of dealing with Qwest packaged and non-basic special services. In addition, it may be useful in the determination of appropriate discounts for already discounted, volume / term contract services.

- **Reliance On A Multiple Discount Model – Packaged/Special Telecommunications Services**

Q. WHAT ARE PACKAGED/SPECIAL SERVICES AND WHY SHOULD A COMPOSITE DISCOUNT BE DERIVED FOR SUCH SERVICES?

A. As the descriptor indicates, "Packaged / Special Services" are non-basic services or merely some combination of retail telecommunications services. For example, Basic Residence Service and Central Office (CO) Features are packaged together in the Company's newly offered "CustomChoice™" product, while Centrex is a non-basic special service made up of Basic Business Service, coupled with CO Features, Intercom functions and other unique characteristics.

A composite discount is useful in discounting packaged / non-basic special services, such as CustomChoice™, ISDN, PBX, Centrex, and Advanced Communication Services (ACS), such as Frame Relay, since the number and type of non-basic and/or services packaged together, have changed or varied, and will continue to do so. Often, packaged services will cross basic service category definitions; therefore, application of a basic service discount may be difficult, as well as inappropriate. In these non-basic or product combination circumstances, the use of a composite discount is recommended in order to ease discount administration and application concerns.

- **<u>Reliance On A Multiple Discount Model - Volume / Term Contract Telecommunications Services</u>**

Q. WHAT ARE VOLUME/TERM CONTRACT TELECOMMUNICATIONS SERVICES?

A. Volume/Term contracts can involve Individual Case Basis (ICB) pricing agreements where Qwest has custom designed, bid and secured the provision of telecommunications services via a separate large volume pricing arrangement/contract. Or, they can involve situations where Qwest has already established customer agreements based upon special reduced-tariff pricing in exchange for "extended term" contractual obligations.[11]

[11] Qwest policy and legal issues regarding whether existing Qwest contracts are assumable or transferable to resellers are not addressed herein. ICB or reduced-tariff/extended term contracts initiated by resellers themselves are not encompassed in this discussion, nor are they at issue, since services procured from Qwest would reflect applicable tariffed rates and resale discounts. Discussion of this topic is provided for the purpose of addressing unique avoided cost and resale discount calculation issues relating to Qwest initiated/existing and already-discounted volume and term service contracts.

Q. WHAT CONSIDERATIONS ARE IMPORTANT IN DETERMINING IF A RESALE DISCOUNT IS APPLICABLE TO QWEST VOLUME/TERM CONTRACT SERVICE PRICING?

A. Qwest initiated/existing volume/term contracts comprise only a small portion of Qwest's telecommunications services, but like packaged services, they require special consideration in regard to evaluating avoided costs. Contracted services can be single services, but are more often comprised of several services, which are offered at a reduced-retail price. Since contract services are often comprised of more than one service, and since they already reflect reduced pricing due to lower retailing costs and guaranteed terms, a separate avoided cost analysis and/or the use of a re-evaluated and/or reduced composite, "packaged/special service", discount may be appropriate.

For Qwest initiated/existing contract services, a separate composite discount analysis is appropriate for volume and reduced-retail extended term pricing because contract rates already reflect substantially reduced "retail marketing" type costs due to expectations of lower ongoing costs associated with customer sales, advertising, and billing and collection activities for contract customers. Retail cost activities such as these are key avoided cost elements in the determination of avoided costs used in establishing full-price resale discount rates. Contract services reflect a significant level of sunk costs that are not avoided. Therefore, for reduced-retail price services, care must be taken to assure that avoided costs are not double counted in reduced-retail resale pricing situations.

Q. HOW SHOULD THE COMMISSION DETERMINE THE APPROPRIATENESS OF, AND/OR PROPER DISCOUNT FOR, QWEST INITIATED/EXISTING VOLUME/TERM CONTRACT TELECOMMUNICATION SERVICES?

A. In deciding whether a resale discount on Qwest's volume/term services is even warranted a separate review of contract law/terms is required. If Qwest's existing contracts are legally subject to resale and further discounting is deemed to be warranted, then the discount determination for contract services must give due consideration to the retailing type costs that are avoided in reduced-retail, versus full-retail, service prices/rates. This requires an assessment of any retailing costs that are avoided for services already priced at a reduced-retail rate. Such analysis may well indicate that no further reduction in already discounted pricing is warranted. Or, at least it would indicate that a full-retail service rate discount is inappropriate to apply to these services because it would result in a double counting (double discounting) of avoided retail costs. (See Exhibit DMG - 1 – Addendum).

Q. PLEASE EXPLAIN HOW DOUBLE COUNTING OF AVOIDED COSTS WOULD OCCUR.

A. Double counting of avoided costs would occur if full-service avoided retail costs were used in discount calculations for Qwest initiated term discounted and/or contract services when the lower rates for these services already account for reduced retail cost efforts. In keeping with the resale discount provisions of the Act and to avoid double discounting, already discounted services require a separate avoided cost analysis, which properly considers only the costs that are inherent in and comprise the discounted service rates.

Additionally, contract service discount consideration must recognize that avoided retailing costs for "existing" Qwest contracts would be minimal, if any. For Qwest initiated/existing contracts, "retail marketing" costs include costs expended up-front in initiating, designing and facilitating the contract. Because Qwest incurs these costs up front, it will not avoid them if customers terminate their existing contracts prematurely by transferring their business to resellers. Although there are retailing costs that remain inherent in the contract service rate, they constitute sunk costs that are not avoided by Qwest. Accordingly, they should not be used in determining a resale discount to apply to existing contract rates that already reflect reduced-retail pricing.

Resellers would benefit greatly from the up-front retailing efforts of Qwest since a reseller would not duplicate the costs incurred by Qwest if existing contracts were merely transferred. Only if, and when, new contracts are actually initiated by resellers will a reseller's retailing costs be comparable to Qwest's. If and when resellers initiate their own volume/term discount contracts, they should do so from the tariffed rate less the resale discount. Discounting Qwest's reduced-retail volume/term contract rates by applying full-retail avoided cost discount rates would be a misapplication of the full-retail discount rates, and it would not be in compliance with the "rate" and "cost inherent in the rate" language and directives of the Act.

• **Reliance On A Multiple Discount Model – Operator Services/Directory Assistance**

Q. WHAT CONSIDERATIONS ARE IMPORTANT IN DETERMINING IF A RESALE DISCOUNT IS APPLICABLE TO QWEST'S OPERATOR SERVICE/DA SERVICE?

A. Of primary concern is whether resellers will be purchasing Qwest's Operator Service/Directory Assistance (DA) at all. Many CLEC's and resellers have demonstrated or indicated that they will self-provision or buy these services through other competing ILEC's or other providers. If Qwest service is not purchased, retailing related costs associated with the service should not be included and allowed to contaminate the resale discount calculations for Qwest's other services. If Qwest's Operator Service/DA service is to be purchased, and Qwest's existing wholesale carrier rates are not employed, then a separate and unique avoided cost analysis and resale discount would be required in order to recognize that when the service is provided, Qwest will not avoid any of the direct costs of providing Operator Service/DA.

• Reliance On A Multiple Discount Model - Summary

Q. HAS QWEST FILED FOR AND/OR RECEIVED ORDERS TO IMPLEMENT MULTIPLE RESALE DISCOUNTS, RATHER THAN A SINGLE COMPOSITE DISCOUNT, IN COST DOCKET ORDERS RECEIVED IN OTHER JURISDICTIONS?

A. Yes. Multiple resale discounts, rather than a single composite discount, have been requested and/or ordered in several states. In fact, only some of the very early arbitration cases developed an interim single composite discount and only a very few single discounts are in effect today. In all of its cost docket cases filed to date, Qwest has requested multiple resale discounts. Orders received in other states, such as Colorado, Utah, Nebraska and Iowa, require the use of product category differentiated discounts.

Q. PLEASE SUMMARIZE WHY THE COMMISSION SHOULD SET MULTIPLE DISCOUNTS IN THIS PROCEEDING.

A. The Commission should set multiple discounts in order to recognize that:

- Qwest has multiple services and rates that resellers will avail themselves of under the provisions of the Act;
- the proportion of retailing costs comprised in various rates vary dramatically among services offered by Qwest;
- resellers make no pledge, and are not bound, to purchase all Qwest retail services in the same "composite" mix currently provided to Qwest customers;
- the Act provides the foundation for unique category discounts, and the FCC acknowledged that multiple discounts may be appropriate;
- a single discount facilitates reseller arbitrage;
- packaged, special, and miscellaneous services should be treated separately from basic services;
- volume / term contracts initiated by Qwest constitute already discounted retail services which have different avoided costs than comparable full-retail services; and
- Operator Service/DA service has separate rates, and many resellers will self-provision, or use alternative providers other than Qwest, in providing this service to its customers.

IV. QWEST EMBEDDED AVOIDED COST STUDY

Overview

Q. HAVE YOU PROVIDED DOCUMENTS SUPPORTING THE QWEST EMBEDDED AVOIDED COST STUDY AND THE DISCOUNTS THE STUDY PRODUCES?

A. Yes. Exhibits to my testimony contain documentation describing the Qwest embedded avoided cost study, the resale discount calculations, and the results. Exhibit DMG - 1 provides a narrative description of the study. Proprietary Exhibit DMG - 2 depicts the calculations and results of the study.

Guidelines For Preparing Qwest's Embedded Avoided Cost Study

Q. WHAT BASIC GUIDELINES UNDERLIE THE QWEST EMBEDDED AVOIDED COST STUDY?

A. Two basic guidelines were recognized. First, the Act provides two key guiding principles:

- Section 251(c)(4) of the Federal Act requires that incumbent LECs offer for resale at wholesale rates any telecommunications service that the carrier provides at retail to subscribers who are not telecommunications carriers.

- Section 252(d)(3) states that State Commissions shall determine wholesale rates on the basis of retail rates charged to subscribers for the

> telecommunications service requested, excluding the portion thereof attributable to any marketing, billing, collection, and other costs that will be avoided by the local exchange carrier.
>
> (Emphasis Added).

Second, as the Act implies and the FCC's Order correctly recognized:

- each retail service must meet the statutory definition of a telecommunications service that is provided at retail to subscribers who are not telecommunications carriers.[12]

Neither the Act, nor the FCC Order, prescribed a specific listing of services that are subject to the resale requirement, and neither provided a detailed or absolute methodology for determining avoided costs.

Q. IN ADDITION TO THE BASIC PRINCIPLES YOU JUST MENTIONED, WHAT ADDITIONAL GUIDELINES DID QWEST EMPLOY TO DEVELOP ITS EMBEDDED COST STUDY?

A. Additional guidelines for preparing the Qwest embedded avoided cost study included:

1. ***Employ an approach that reflects the Federal Act and/or any valid FCC directives for identifying avoided Direct and Indirect cost components for services subject to resale.*** In preparing its embedded avoided cost study, Qwest patterned its cost study format to coincide with a general format that has been

12 FCC 96-325 The First Report & Order in the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Section VIII. Resale, para. 871 and Footnote 2088 at page 415.

previously filed in many of Qwest's jurisdictions. Although not identical, this format recaps and depicts:

(a) Total Intrastate booked revenue and operating expense components;

(b) "Retail" revenue, expense and capital cost components (exclusive of non-resale services);

(c) the split of direct and indirect expenses and capital costs;

(d) the avoided cost percentage assumptions for separate *"retail"* service direct and indirect cost elements; and

(e) the resulting avoided cost estimates and calculated resale discounts.

Qwest embedded study conclusions were derived independent of FCC interconnection Order directives or assumptions. As a result of this independent analysis of Qwest data, and only where appropriate, do Qwest embedded avoided cost study conclusions coincidentally reflect FCC Interconnection Order directives or assumptions. For example, both the Company's study and the FCC's study determined that Plant Specific and Non-Plant Specific costs were costs that are not avoided due to resale. Additionally, for purposes of the Company's filing in this proceeding, and as in the original FCC study, general support costs, which are indirect costs, were conservatively considered avoided in proportion to avoided direct costs.[13] This is a conservative approach in that such costs may not actually

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[13] FCC 96-325 The First Report & Order in the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Section VIII. Resale, para. 918 and 919.

be avoided.

2. ***Employ "Intrastate Product-specific" data.*** The first step in the avoided cost analysis is to identify all the costs to include in the analysis. In this regard, it is important to isolate intrastate operations in order to properly evaluate embedded avoided costs and to calculate cost discounts for specific and disaggregated intrastate resale services.

Exchange Access Service is not subject to discount under the requirements of Section 251(c)(4) of the Act because it is a wholesale carrier service, not an end-user retail telecommunications service.[14] Therefore, elimination of all Interstate Access revenue and Part 36/69 separated costs (including elimination of all interstate CCL loop costs and the End-User SLC[15]) is essential in identifying the body of costs to include in the analysis. Elimination of these costs from the analysis also is consistent with the fact that state commissions only have jurisdiction over intrastate, not interstate, costs.[16]

Since the current Qwest - Arizona intrastate rates were originally established based

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14 FCC 96-325 The First Report & Order in the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Section VIII. Resale, para. 873, 874 and 875.

15 FCC 96-325 The First Report & Order in the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Section VIII. Resale, para. 873, 874 and 984.

16 Section 252(d)(3) of the Act requires that the identified avoided costs be inherent in the rates discounted. Interstate costs are not inherent in intrastate rates.

on the jurisdictional intrastate cost assignments resulting from the FCC's Part 36/69 separations procedures,[17] and since the prices we are dealing with are intrastate, the embedded avoided cost study and embedded discount calculations must reflect corresponding intrastate data. In other words, only intrastate costs should be included in the analysis and discount calculation.

3. ***Isolate and exclude "Non-Resale Services" from the analysis of avoided costs and the calculation of discounts.*** As the Act requires, non-resale services must be removed from an avoided cost study so that the avoided costs identified, and the discount calculations, are not contaminated and artificially inflated or deflated for services that are not subject to resale discounting. Services, such as Intrastate Access (Interstate is jurisdictionally removed automatically by starting the analysis with Intrastate operations), Intrastate Third Party Billing and Collection (Interstate is already removed), Operator Services/Directory Assistance and Non-recurring charges, have been excluded in developing the Qwest embedded avoided cost study for recurring rate discounts, since these services are not subject to the discount provisions of the Act and/or their inclusion would erroneously contaminate recurring rate discount calculations. (See Schedule 3.1 of Proprietary Exhibit DMG - 2)

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17 See CFR 47, Part 36 and Part 69.

4. ***Use appropriate Company/State/Product-specific assumptions and embedded cost data necessary to obtain the most meaningful embedded avoided costs and resale discount results.*** The Qwest embedded study employs Qwest - Arizona, product-specific, intrastate, CARS (Cost Accounting Reporting System) data and replaces the vacated FCC generic industry assumptions regarding avoided costs with Qwest specific data. [18]

The FCC's generic avoided cost assumptions were never Qwest or Qwest - Arizona specific, nor were they product-specific. Rather, they were merely broad compromise factors created from comments collected from a variety of agencies, resellers, and companies other than Qwest. Specific Qwest - Arizona intrastate data must be used wherever possible to create resale discounts for Qwest - Arizona intrastate rates. The use of the FCC's Automated Report Management Information System (ARMIS) public information, the FCC's generalized industry-wide 90% avoided cost default proxy factors (applied to entire, unanalyzed account balances), the default "Total 14 State" discount result, and the use of aggregate product information are clearly inappropriate for calculating meaningful resale discount percentages when more detailed and specific Qwest - Arizona data is available.

5. ***Incorporate Qwest's previous experience with its <u>non-resale</u> Access Product in developing avoided costs for resale services.*** Prior to the passage of the Act,

18 United States Court of Appeals decision in case No. 96-3321, dated July 18, 2000, at page 16 – 18

Qwest had never had to resell its retail telecommunications products on a large scale; therefore no meaningful historical actual avoided cost data existed. Where Qwest now has post-Act historical wholesale experience (i.e. Customer Operations-Sales expense), actual data is employed in the study. In areas where an absence of tracking and actual data still exists, Qwest's wholesale Access product experience provides a reasonable surrogate and foundation for approximating avoided costs. In this study the access surrogate is used in evaluating the Product Management costs recorded as Customer Operations/ Marketing costs and in determining Uncollectibles expense for resale services which will be offered in a wholesale-type environment.

Basic Strengths And Attributes Of The Qwest Embedded Avoided Cost Study

Q. WHAT ARE THE BASIC STRENGTHS AND ATTRIBUTES OF THE QWEST AVOIDED COST STUDY?

A. The Qwest embedded study clearly addresses the requirements of the Act. The particular strengths of the study include:

(1) The study is prepared from Qwest's booked financial records. Specifically, the study is based on 1999 actual Arizona operating results, with data that are

vacated FCC avoided cost definitions and associated rules.

consistent with 1999 FCC ARMIS Reports where appropriate, detailed sub-account records, special functional cost analysis/time studies and the Company's embedded cost accounting system, CAAS/CARS.

(2) The study utilizes intrastate data, which correspond with the historic intrastate rate setting process and reflect the fact that intrastate retail rates are comprised of intrastate retail costs.

(3) The study removes costs inherent in its USOA account balances which are associated with non-resale / excluded services (e.g. Intrastate Access, Third Party Billing and Collection, Wireless (RCC and Cellular) Interconnect Access, Operator Services/DA, Non-recurring, and E911) in compliance with the language of the Act. Additionally, Operational Support System (OSS) costs are excluded from the study since they constitute reseller related wholesale costs that are not avoided, and they require and are being addressed via a separate recovery mechanism.

(4) The study also incorporates the impacts of jurisdictional adjustments for items such as Arizona-specific depreciation.

(5) The study incorporates all cost elements comprised in Arizona rates, including cost data for Capital Costs (both direct and indirect), net InterArea Rent

Compensation, and Property and Other Taxes.

(6) The study analyzes Qwest costs and account balances in detail to determine with specificity the costs Qwest will avoid instead of relying on broad-brush, or vacated FCC 90% "proxy", cost avoidance factors which are not applicable to entire account balances or supportable in regard to Qwest operations.

(7) The study also provides avoided cost discount percentages for multiple service categories, rather than only a single avoided cost discount percentage, which would lend itself to resale arbitrage.

These attributes ensure that Qwest's embedded avoided cost study complies with the Act and addresses the United States District Court For The District of Arizona remand decision in U S WEST v. Jennings. Because the study fully complies with the Act, and accurately estimates Qwest's avoided costs, the Commission should use the study to establish the avoided cost discounts for Qwest.

Records Employed by Qwest To Develop Resale Discounts

Q. WHY DID QWEST EMPLOY DETAILED ARIZONA-SPECIFIC DATA, RATHER THAN RELY SOLELY ON FCC ARMIS DATA, TO DEVELOP ITS EMBEDDED AVOIDED COST STUDY?

A. Relying solely on ARMIS data would not permit a comprehensive, State specific, intrastate product-specific, analysis of costs. ARMIS data contain high level, summary information arrayed for FCC and general public consumption. ARMIS data contain only aggregated information for the intrastate products offered by Qwest. Therefore, Arizona Intrastate ARMIS data would be too general in nature to properly identify even the revenues associated with resale services, let alone avoided retailing costs for Arizona operations. ARMIS certainly does not provide enough intrastate detail to eliminate non-resale service and cost information, as required by the Act.

Q. WHY DOESN'T ARMIS PROVIDE ALL THE NECESSARY INFORMATION TO IMPLEMENT THE RESALE DISCOUNT CALCULATION PROVISIONS OF THE FEDERAL ACT?

A. The FCC's ARMIS reports were never designed for the purpose of determining the intrastate wholesale prices that the Act requires. It constitutes only one of many data models that summarize information from many data sources regarding telephone company operations.

The ARMIS reports contain interstate product data for FCC use and public consumption but do not lend themselves to the more refined intrastate product-specific analysis that is necessary to establish appropriate resale discounts to be applied to specific Arizona intrastate rates. The ARMIS 43-03 - Joint Cost Report, provides annual data for each account prescribed under the FCC Part 32 Uniform Systems of Accounts (USOA) for "Total State" operations prior to FCC Part 36 jurisdictional separation between Interstate and Intrastate operations. The ARMIS 43-04 - Access Report, further delineates the 43-03 Report Subject-to-Separations amounts by splitting revenues, costs and investment between Intrastate and Interstate operations, as well as the various interstate components (products/rate elements) of Interstate Access and Billing and Collection services. The jurisdictional split reflected in the 43-04 report reflects compliance with FCC Part 36 and Part 69 rules.

However, neither of these reports, nor any of the other ARMIS Reports, refines the Company's reported financial data to reflect specific intrastate products. None will assist in isolating intrastate "non-resale" services that must be excluded from resale discount calculations. Although the FCC originally utilized "Total 14 State U S WEST " ARMIS data to prepare its interim overall default resale discount for application in all Qwest states, the FCC also made it very clear that this "quick and dirty" analysis was used only to set interim default ranges in the absence of a more detailed avoided cost study. Thus, it is very clear that more specific Qwest - Arizona, product-specific, intrastate data can, and should, be used. Qwest has provided the Commission such information in this proceeding.

Q. SINCE ARMIS DATA IS TOO GENERAL, WHAT QWEST EMBEDDED COST DATA SHOULD BE USED TO PERFORM THE EMBEDDED AVOIDED COST STUDIES IN THIS PROCEEDING?

A. The Commission should rely upon Qwest's CAAS (Cost Accounting Allocation System)/CARS (Cost Accounting Reporting System) data. CAAS/CARS is the Company's cost accounting process that produces detailed, product-specific, embedded cost reports. CAAS reports provide product/service financial information on a total state (interstate + intrastate) basis.[19] CARS provides the same product/service financial information on an intrastate, jurisdictionally separated, basis.

I would note that the Company's CAAS/CARS embedded cost report model and the FCC's ARMIS report model each identifies jurisdictional product information: CAAS for total state services, ARMIS for interstate services, and CARS for intrastate services. In addition, these systems also share a common data source, the FCC Part 32 booked records of the Company, and many common cost allocation and reporting methodologies, including Part 64 unregulated costing methods. However, the FCC's ARMIS reports were never designed or intended to identify and array <u>intrastate</u> product-specific data. Only the Qwest CAAS/CARS process provides this intrastate

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19 An overview of the assignment methodologies used in CAAS as well as a description of the purpose, objectives and cost assignment principles used in the system are included in Exhibit DMG - 5 of my testimony.

information for Qwest.

A properly designed embedded avoided cost study requires an input data source containing correct and relevant product and cost information. In developing an embedded avoided cost study for determining Qwest's intrastate retail service discounts, it stands to reason that detailed Qwest *intrastate* product input data sources should be used. Therefore, the use of CAAS/CARS data, rather than only the aggregated ARMIS data, is clearly the correct choice.

Qwest's CAAS/CARS embedded cost data is familiar to state regulators. It has been used in many Qwest jurisdictions where state commissions have required the company to provide embedded cost support and/or detailed product information on an embedded basis. In addition to use and review by state regulators, the Company's CAAS/CARS data and procedures have been periodically audited by the Company's external auditors (e.g. Coopers and Lybrand and Arthur Andersen).

Embedded Cost Study Avoided Cost Percentages

Q. AFTER IDENTIFYING THE COST DATA UPON WHICH TO BASE THE AVOIDED COST DISCOUNT CALCULATIONS, WHAT IS THE NEXT STEP FOR CALCULATING THE DISCOUNTS?

A. The next step is to analyze the categories of costs and to determine what percentage of costs in those categories will be avoided when Qwest sells retail telecommunication services on a wholesale basis.

Q. PLEASE EXPLAIN YOUR EARLIER STATEMENT WHERE YOU INDICATED THAT ACTUAL AVOIDED COST DATA IS UNAVAILABLE FOR IDENTIFYING AVOIDED COSTS OR DEVELOPING AVOIDED COST PERCENTAGES FOR USE IN AN EMBEDDED AVOIDED COST STUDY.

A. The need for identifying avoided "retailing" costs stems from the resale provisions of the Act, and, thus, there had been no historical requirement to uniquely identify such costs in the past. In limited areas where unique data is not tracked or available (e. g. Product Management and Uncollectible), costs for the provision of Qwest's wholesale carrier access service provide a reasonable surrogate for determining resale provisioning cost requirements and thus identifying net avoided retailing costs.

Q. WHY DO CARRIER COSTS RELATING TO QWEST'S ACCESS SERVICE PROVIDE A REASONABLE SURROGATE FOR PRODUCT MANAGEMENT AND UNCOLLECTIBLE RESALE ACTIVITIES AND COSTS THAT WILL BE INCURRED TO PROVISION RESALE?

A. As my Exhibit DMG – 3 indicates, Product Management costs for the resale of retail telecommunications service will be very similar to those incurred for providing wholesale Access Service. A variety of product management type functions are "wholesale" in nature and would be required (not avoided) even if there were no retail operations, because Qwest's product managers focus on developing and bringing its products to the market place.

For years, U S WEST / Qwest has employed product managers to serve the wholesale Access service needs of interexchange carriers. Today Qwest's "Carrier" market unit is dedicated to serving the access needs of interexchange carriers in order to provide these customers with "wholesale" switched and dedicated access products. This market unit incurs wholesale costs that are characterized and recorded as "Marketing - Product Management" costs under Part 32 accounting rules. Carrier Access actual recorded costs demonstrate that there are numerous product management cost functions performed in providing wholesale, not retail, services today.

The comparison of total U S WEST / Qwest retail services product management costs and Carrier Access service actual product management costs facilitates the identification of the level of product management costs that would be avoided when providing retail services on a resale, "wholesale", basis. By comparing total incurred product management costs, by retail product category, with incurred Carrier Access product management costs in the State, avoided costs percentages can be determined for each product group.

For reseller uncollectibles the use of carrier uncollectibles as surrogate is a conservative approach. Reseller uncollectibles will be similar, if not higher, than those experienced with carriers due to the number of resellers and the churn rate of resellers and their customer base.

Q. WHAT PERCENTAGES OF "RETAILING" COSTS DOES QWEST'S STUDY ASSUME THE COMPANY WILL AVOID SELLING SERVICES AT WHOLESALE?

A. The following avoided cost percentages were determined to be applicable to Qwest "retail" intrastate service expenses. That is, the following percentages are applicable only to the portion of Qwest's intrastate account balances remaining after identifying and removing non-resale/excluded service costs (e.g. Intrastate Access, E911, Wireless (RCC and Cellular) Interconnect Access, Intrastate Third Party Billing and Collection Services, Operator Services/Directory Assistance, and Non-recurring services).

Expense Category	Costs Avoided
Marketing - Product Management	0 - 64%
Sales	2 - 99%
Advertising	50%
Customer Services -	
Qwest Billing and Collection	82 - 99%

Uncollectibles	88 - 89%

A range is depicted for certain expense types since product categories vary in the amount of retailing costs that are incurred. For example, Qwest's study indicates that Basic Exchange Residence product management costs are 0%[20] avoided versus Qwest Central Office (Vertical) Services product management costs, which are 64%, avoided.

Discussion and Analysis Of Avoided Costs

Q. IN DEVELOPING THESE AVOIDED COST PERCENTAGES, WHAT TYPES OF COSTS WERE CONSIDERED TO BE AVOIDED COSTS IN THE QWEST EMBEDDED AVOIDED COST STUDY?

A. The Qwest study identifies "direct" retail (expense and capital-related) costs as well as supporting "indirect" retail (expense and capital related) costs. These costs include

20 Where Qwest's Access product history indicates that wholesale product management would equal or exceed a retail product group's potential avoided retailing costs, avoided cost factors were conservatively set at 0% rather than employing assumptions which would reflect incremental cost increases which may occur due to resale. Including incremental costs would result in lower resale discounts.

Customer Operations costs, End-User Uncollectibles expense, and a proportionate share of a variety of indirect costs (i.e. common overhead type costs).

Q. WHAT TYPE OF COSTS ARE CONTAINED IN QWEST'S CUSTOMER OPERATIONS ACCOUNTS?

A. Qwest Customer Operations costs are recorded in several USOA accounts defined by the FCC's CFR 47, Part 32, accounting rules. Customer Operations costs are recorded in two main accounts, Account 6610 - Marketing, and Account 6620 - Customer Services; both of which have additional sub-accounts.

Account 6610 has three sub-accounts consisting of specific types of marketing costs:

- Account 6611 - Product Management,
- Account 6612 - Sales, and
- Account 6613 - Advertising.

Account 6620 is comprised of sub-accounts containing three types of customer operations costs:

- Account 6621 - Call Completion,
- Account 6622 - Number Services, and

- Account 6623 - Customer Services.

Q. WHAT INITIAL CONCLUSIONS WERE REACHED REGARDING THE LEVEL OF QWEST'S RETAIL "MARKETING" COSTS THAT MAY BE AVOIDED?

A. Of the three "Marketing" cost elements in Account 6610, Qwest will still continue to incur a very significant portion of its product management expenses in the delivery of services provided to resellers. As a result, only a portion of these expenses will be avoided. Product sales costs comprise a large portion of Qwest's marketing costs. Many, but not all, of Qwest's sales costs will be avoided in facilitating resale. A substantial portion of Qwest's product advertising in the market place is largely informative and thus is not market share/volume sensitive. Wholesale and retail operations both derive a benefit from this type of Qwest advertising, therefore, only a portion of these costs should be attributed to retail operations avoided costs.

I hasten to point out that a portion of the Qwest product management, sales, and advertising costs also relate to Qwest's <u>non-resale</u> services (e.g. Intrastate Access, Wireless Interconnect Access, E911, Mobile, and Public Access Lines). None of the non-resale service related costs can be considered to be avoided if the cost analysis is to be in compliance with the language and intent of the Federal Act.

Q. IN REGARD TO THE MARKETING (6610) ACCOUNTS, COULD YOU DESCRIBE IN MORE DETAIL WHY QWEST WILL CONTINUE TO INCUR SIGNIFICANT MARKETING - PRODUCT MANAGEMENT COSTS IN THE DELIVERY OF WHOLESALE SERVICE TO RESELLERS?

A. Qwest will still continue to incur product management costs associated with its current non-retail services at the present levels and, as Qwest's access service experience indicates, Qwest will obviously incur product management expenses in serving resellers. While Qwest recognizes that product management functions and costs may change in a wholesale environment, they will certainly not go away completely just because a service is provided on a wholesale basis. Analysis of these costs indicates that although Qwest product managers do some work that would apply specifically to retail offerings (e.g. setting up Qwest specific sales promotions, etc.), these same product managers also perform product development work that supports wholesale/resold services. For example, costs associated with developing and implementing most product methods and procedures and rate list filings will apply whether the service is provided on a retail or wholesale basis. Also, while Qwest will avoid some retail product management expenses, it will now incur new product management expense to serve the resale market.[21] Exhibit DMG - 3 provides a listing

21 The FCC Order indicates that new wholesale costs such as these should be netted against avoided costs (FCC 96-325 The First Report & Order in the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Section VIII. Resale, para. 928).

of various product management functions that Qwest performs today that correlate with wholesale carrier and/or reseller interface functions. Since many of these functions are currently performed for wholesale carrier services and they must be performed for resale, only a portion of product management costs can be considered avoided due to pure retail efforts.

Q. WHAT CONSIDERATIONS AND ANALYSIS WERE REQUIRED REGARDING QWEST'S SALES COSTS?

A. A portion of the Sales - Account 6612 costs relating to end-user contact may be diminished, but not all Sales costs will be eliminated. Reduced end-user costs have been replaced by reseller contact costs incurred by Qwest in order to interface with and provide resale and unbundled services to resellers and CLEC's. As Qwest loses "retail end-user customers" and associated "Sales" costs, it picks up numerous resellers, as the "replacement customers", and continues to incur "Sales" costs for similar functions. For example, Qwest sales employees will have to negotiate contracts with the resellers and CLEC's and field, investigate, and respond to their inquiries and requests. Exhibit DMG - 4 provides a more detailed review of sales functions required in a wholesale environment.

Therefore, Qwest's actual experience and recorded costs for dealing with reseller and unbundled-related cost functions need to be recognized and netted against end-user avoided retail functions when determining the avoided cost percentage for Account 6612 Marketing - Sales. For purposes of this study, reseller and unbundled service related sales costs have been identified and they offset end-user retail costs avoided. Additionally, certain of Qwest's sales costs will not be avoided due to resale, since they relate to services not subject to resale discount.

Q. HOW ARE ADVERTISING COSTS HANDLED IN THE QWEST EMBEDDED AVOIDED COST STUDY?

A. Product advertising costs were separately evaluated. Most product advertising is not market share/volume sensitive. As a result, product advertising performed by Qwest, for services that can ultimately be resold by resellers, benefits Qwest and resellers, reducing a reseller's need to duplicate such costs.[22] An example of such advertising costs are Qwest's "*69 - Last Call Return" public advertising campaigns. Qwest equipment facilitates Qwest customer use as well as use by the customers of resellers. Revenue collections for Qwest and resellers are enhanced whenever their end-user customers become informed about, and subsequently use, this advertised service. Since product advertising is aimed at increasing service penetration, and is informative to the general marketplace, it should not be considered a totally avoided cost due to resale. However, considering that product advertising impacts Qwest

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22 Although resellers will be reselling a variety of Qwest retail telecommunications services, resellers will not be duplicating Qwest advertising of its trademarked services. However, resellers' customer awareness and penetration will be enhanced as a result of Qwest's advertising of such services.

customers, as well as reseller customers and resellers themselves, Qwest's study treats these costs as partially avoided. Additionally, certain of Qwest's advertising costs will not be avoided due to resale, since they relate to services not subject to resale discount.

Q. WHAT FINAL CONCLUSIONS DID QWEST REACH WITH REGARD TO ITS "MARKETING" COSTS?

A. Qwest concluded that the FCC's overly simplistic, generic 90% avoided cost factor assumption for all the Qwest "Marketing" costs summarized in Account 6610 was erroneous, since more specific Qwest Arizona sub-account and detail support information was available indicating that separate and lower percentages were appropriate. Therefore, the Qwest embedded study develops and employs a separate factor for each resale product group evaluated and for each of the three components of total Marketing expense - Product Management, Sales, and Advertising.

Once developed, these percentage factors are applied to the intrastate retail service portion of the account balances, on a product-category basis in the embedded study.[23] <u>I emphasize that the percentages developed are only applicable to the intrastate retail</u>

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23 See Qwest Embedded Study Proprietary Exhibit DMG - 2, Schedules 3.6 and 3.6.1.

service portion of the account; they would be too high to apply to the entire account balance.

Q. WHAT INITIAL CONCLUSIONS WERE REACHED REGARDING QWEST'S "CUSTOMER SERVICE" COSTS WHICH MAY BE AVOIDED?

A. Customer Services costs -- Accounts 6621 and 6622 -- include operator service and directory assistance related costs. These costs must either be totally eliminated from the study or included and treated as "not avoided" in order to avoid contaminating recurring retail discount calculations with costs that are not inherent in retail recurring rates. Simply put, and as other commissions have recognized, most costs associated with operator service and directory assistance are not part of Qwest's recurring basic service retail rates; therefore, they should not be included in calculating discounts to apply to retail basic service rates. In addition, costs associated with basic operator intercept and customer name and address data base maintenance are functions that will not be avoided in provisioning resale.

Account 6623 consists of two primary types of expenses: Billing and Collection and Business Office Non-Recurring costs. A proper analysis of the billing and collection portion of the account must recognize that there are costs associated with the following services: Intrastate Access, Wireless Interconnect Access, Public Access Lines (PAL), Billing and Collecting for Third Parties, Independent Company Billing and Collecting, and E911. These services are not subject to resale and/or Qwest will not have any avoided costs associated with them. Accordingly, the costs associated with these services are excluded from the discount calculations.

Non-recurring costs recorded in Account 6623 also need special consideration. They constitute sunk cost charges that are separate from recurring service end-user and interconnection / CLEC billing. Existing customers do not incur non-recurring charges on a routine or monthly basis; therefore, including them in calculating recurring service discounts is improper and would violate the Act's requirement that only costs included in the retail rates are to be treated as avoided. Furthermore, if existing customers are transferred to resellers, Qwest's non-recurring charge activities are sunk costs that are not avoided.

Q. WITH REGARD TO THE CUSTOMER SERVICE (ACCOUNT 6620) EXPENSES, YOU INDICATED THAT OPERATOR SERVICE/DA COSTS COMPRISE A PORTION OF THE CUSTOMER OPERATIONS EXPENSES THAT SHOULD BE EXCLUDED FROM THE EMBEDDED AVOIDED COST STUDY. WHY SHOULD THESE COSTS BE HANDLED THIS WAY IN AN AVOIDED COST STUDY?

A. Operator Service/Directory Assistance expenses are not included in the costs for basic local exchange service. Operator Service/DA services have their own rate lists and/or result in separate charges. Furthermore, as many resellers have indicated, they intend to self-provision these services through competing ILEC's or other providers. Therefore, the costs for these services should not be considered "avoided" in developing recurring rate discounts for other services. Instead, they should be eliminated entirely from the recurring rate resale discount analysis. Otherwise, the discounts for retail services would be contaminated and erroneously inflated, creating a double-dip in revenue loss.

In the event that resellers choose to purchase Operator Service/DA services, two alternatives are available. The Commission could designate that resellers purchase Operator Service/DA from Qwest via its presently established carrier wholesale tariff or the Commission could set a separate resale discount from a separate avoided cost analysis as Proprietary Exhibit DMG - 6 depicts.

Q. YOU ALSO INDICATED THAT NON-RECURRING COSTS COMPRISE A PORTION OF CUSTOMER OPERATIONS EXPENSES AND THAT THEY SHOULD BE EXCLUDED FROM THE EMBEDDED AVOIDED COST STUDY. WHY SHOULD THESE COSTS BE EXCLUDED?

A. Customer Service costs relating to non-recurring charge compensation and procedures require special consideration and exclusion from the discount calculations. Traditional, "embedded", non-recurring charges for the establishment of service are separate and unique from retail telecommunications services that are subject to resale. The costs are by definition, **non**-recurring in nature, and they are not billed to each and every customer, each and every month, like recurring basic and toll services are. They have their own rates/pricing elements and are charged only when applicable. Since existing customers are not regularly and routinely billed for non-recurring charges, creating contaminated resale discounts for recurring services by including non-recurring cost impacts would be misguided.

The vast majority of non-recurring costs constitute sunk costs incurred by Qwest in establishing service for its existing end-user customer base. These costs will never be avoided if Qwest customers subsequently transfer to a reseller. Since they are not costs that can be avoided, and since these costs are not inherent in the recurring rates charged to customers, including them as avoided costs in the recurring rate discount calculations would be entirely inappropriate.

Since Qwest's existing customer base provides resellers with the vast majority of their potential customers, inappropriately including non-recurring costs in the recurring rate discount calculations, and assuming an inappropriately high avoided cost percentage, would dramatically and erroneously increase the recurring resale discount percentages that will be applied to recurring service rates. Since non-recurring charges have their own rate lists or charges, applying inflated discounts to each regularly billed recurring service, each and every month the service is billed, just does not stand the test of reason or match the rates and inherent cost language and provision of the Act.

In the post-Telecommunications Act environment, non-recurring compensation and procedures established between Qwest and resellers will need to recognize the costs of transferring existing end-users to resellers, the costs created by additional end-user churn, as well as the costs associated with the processing of newly established reseller end-user accounts. Since reseller non-recurring costs and compensation arrangements will be very different from the traditional end-user non-recurring compensation currently incurred and collected from Qwest end-user customers, it would be totally inappropriate to consider the traditional non-recurring costs as avoided costs in the resale discount calculations. Doing so would contaminate resale discounts created for recurring rate retail services, which have separate rates and costs.

Furthermore, non-recurring charges recorded in Account 6623 also include the order processing costs for resale and interconnection. Resale and interconnection functions are a direct result of wholesale operations resulting from requirements of the Act, therefore, such costs are not avoided "retailing" costs or costs that should be used in determining avoided cost discounts for retail telecommunications services.

Therefore, like Operator Service/DA service, the Company's non-recurring customer service operational costs and revenues have been excluded from the Qwest embedded avoided cost study in determining recurring rate resale discounts. In both instances, Qwest operations should not be impacted twice, or on an ongoing basis, for charges (i.e. non-recurring service charges or Operator Service/DA charges), which have their own rates/fees, and for costs that are not included in the retail rates for routine recurring telecommunications services. Rather, these charges must be treated as separate issues, addressed on a stand-alone basis, and excluded from the discount study in calculating recurring rate discounts.[24]

Q. DESCRIBE IN MORE DETAIL ANY OTHER COSTS RECORDED IN THE CUSTOMER OPERATIONS ACCOUNT AND WHY QWEST WILL CONTINUE TO INCUR CERTAIN OF THESE COSTS IN THE DELIVERY OF SERVICES TO RESELLERS.

A. Besides Operator Service/DA and Non-recurring costs, the Customer Operations cost category contains Customer Service costs for Billing and Collection expenses. Billing and Collection costs are another area of Customer Operations where "retailing" type costs may be reduced, but certainly not entirely eliminated. Although Qwest will not be billing reseller end-users, it will be billing each and every reseller for their

24 Non-recurring business office costs are sunk costs that are not avoided that should be removed from an embedded avoided cost study. However, if they are not removed, separate Qwest analysis would indicate that business office costs (on a per line basis) will not be avoided on a net basis. Any end-user non-recurring costs are offset by incremental reseller costs required for reseller/customer identification, order processing and inquiry. Thus, the avoided cost percentage for any non-recurring costs not excluded from an embedded avoided cost study would be 0%. Exclusion of the costs is the more conservative approach of the two.

wholesale service purchases. These reseller billing costs may be lower than retail end-user billing costs, but they are real costs nonetheless, and they must be considered and included in the determination of avoided costs. Billing and Collection costs currently billed to carriers for Access services clearly demonstrate that B&C costs exist in a non-retail environment. In addition, the billing and collection accounts reflect unique sub-accounts (6623.3 / .4) for the B&C costs billed to Qwest by other exchange carriers (Independent Companies) for designated carrier Independent Company (ICO) Toll. Qwest will not avoid these costs due to resale, and the avoided cost study must recognize this fact and handle these costs as not avoided.

Q. WHAT FINAL CONCLUSION DID QWEST REACH REGARDING ITS "CUSTOMER SERVICE" COSTS?

A. Qwest concluded that the FCC's generic 90% avoided cost factor assumption was totally inappropriate to apply to all Qwest "Customer Service" costs summarized in Account 6620. Cost data specific to Qwest's Arizona operations was required and available to establish the proper percentages to apply to portions of the account balances. Qwest's study employs a separate factor for each resale product evaluated and for each of the three non-excluded components of Total Customer Service (i.e. Call Completion, Number Services, and Customer Services). Call Completion and Number Services functions (Mechanized Operator Intercept and Customer Data Base Maintenance) will be performed by Qwest in a resale environment. These Customer

Operations "Customer Service Costs" must reflect avoided cost percentages of 0% avoided. The portion of Customer Service costs associated with Qwest Billing and Collection expenses is avoided in a range from 82% to 99% for retail services. These percentage factors are applied on a product-category basis in the embedded cost study.[25] Again, I would emphasize that these percentages are only applicable to intrastate retail service amounts, not the entire account balance.

Q. WHAT IS THE SOURCE OF THE UNCOLLECTIBLE REVENUES AVOIDED COST PERCENTAGE USED FOR EACH OF THE PRODUCT CATEGORIES?

A. The Uncollectible Telecommunications End-User Revenues avoided cost percentage used for each of the product categories is based on Qwest's uncollectibles experience with carriers in the wholesale access market.[26] For retail services, the Qwest study employs avoided cost percentages of approximately 88%. However, Uncollectible Telecommunication - Independent Company (ICO) Revenues booked to Account 5301.224, associated with designated carrier ICO toll, must be considered 0% avoided. ICO uncollectible revenue amounts are determined by the various Independent companies based on their toll traffic and constitute costs billed to Qwest that cannot be avoided due to resale.

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25 See Proprietary Exhibit DMG - 2, Schedule 3.6.1, Line (7).

Q. HOW DID QWEST DETERMINE THERE WERE NO AVOIDED COSTS ASSOCIATED WITH ANY OF THE OTHER DIRECT COST AMOUNTS IN YOUR EMBEDDED STUDY AS DEPICTED IN PROPRIETARY EXHIBIT DMG - 2, COLUMN (d) OF SCHEDULES 2 THROUGH 2.5?

A. Qwest reviewed each account and cost element and determined that:

(1) Qwest's current level of direct maintenance and network operations costs recorded in Plant Specific and Non-Plant Specific USOA accounts (Accounts 6110 - 6530) will not change regardless of whether the service sold is to an end-user or to a wholesaler, since Qwest is responsible for maintaining the network and providing the same level of quality service to all customers, wholesale or retail;[27]

(2) Access expense (Account 6540) billed to Qwest by Independent Companies, and any local reciprocal compensation access charges reflected in the operating results under review, will not change and are not avoided costs in provisioning wholesale or resale;

(3) Depreciation /Amortization (Account 6560) should be considered, but split

26 See Proprietary Exhibit DMG - 2, Schedule 3.3, line (15), which shows the avoided factor development.

27 The FCC 96-325 The First Report & Order in the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Section VIII. Resale, para. 919 states that Plant Specific and Non-Plant Specific costs are presumed to be not avoided and Qwest analysis confirms that this is a valid assumption.

between direct and indirect costs to recognize that retail operations include a portion of related indirect investment costs. These indirect costs are considered partially avoided. (See Schedules 3.4 and 3.7 of Proprietary Exhibit DMG - 2); and

(4) Capital Costs (Cost of Money) inherent in retail rates should be properly considered but split between direct and indirect costs in order to recognize that direct network-related capital costs will not change due to resale, and that only the portion of the indirect costs attributable to retailing operations would be avoided. (See Schedule 3.8 of Proprietary Exhibit DMG - 2)

Q. HOW DID QWEST CALCULATE THE PORTION OF COSTS THAT ARE AVOIDED RELATING TO GENERAL SUPPORT AND CORPORATE OPERATIONS EXPENSES IN YOUR EMBEDDED STUDY?

A. The Qwest avoided cost study develops two distinct indirect avoided cost ratios, employing a common formula of _total direct avoided costs_ to _total direct costs_. In both ratios, direct costs include the appropriate Part 32 expense accounts in the 6000 series as well as a "direct" capital cost of money component related to network assets. Although the capital component is not recorded in this USOA Part 32 account series, network capital costs must not be ignored in the avoided cost discount calculations. These costs constitute actual operating costs inherent in the retail rates that are subject to discount, and they require general/corporate operating cost support expenditures.

Capital funding for network-related costs, equipment and capitalized expenses requires a variety of indirect general support costs, including treasury and banking, investor relations, legal, accounting, and human resources, just to name a few. Therefore, capital funding costs must share in the assignment of indirect costs and must be used in developing the direct/indirect avoided cost ratio applied to total indirect costs. Failure to do so would materially overstate the amount of avoided indirect costs caused by resale.

Q. WHY ARE TWO INDIRECT AVOIDED COST RATIOS PRODUCED AND USED IN QWEST'S AVOIDED COST STUDY?

A. A basic, overall, *direct avoided cost* to *total avoided cost* factor is created for application to the majority of indirect costs. However, the basic indirect ratio must be adjusted for applications involving accounts that contain computer related costs (e.g. General Support – General Support Computers, Depreciation/Amortization – General Purpose Computers, Information Management Expense, and Capital Costs – General Purpose Computers) in order to properly handle computer related costs that are not avoided due to resale.

In 1999 the Company incurred significant network-related computer costs, Y2K costs, and interconnection-related computer costs that are not avoided due to resale. Network computer costs are required to run the network support systems including the network utilized by resellers. Interconnection computer costs are new wholesale costs stemming from Qwest's need to redesign its computer systems / programs (excluding OSS) to recognize CLEC information and meet other requirements of the Act. Y2K computer related costs encompass a variety of systems charges that relate to the Company's efforts to develop and ensure system integrity for Y2K compliance. The proper recognition and treatment of network support costs, interconnection related costs and Y2K computer costs, which are not avoided in the resale of retail telecommunications services, necessitates the development and use of a second indirect avoided cost ratio. This adjusted indirect ratio is applied only to the computer related portion of general support expense accounts and capital costs.

Q. DESCRIBE THE TYPE OF COSTS TO WHICH THESE RATIOS WERE APPLIED.

A. The *Direct Avoided Cost/Total Direct Cost* ratios are applied to "indirect" support costs typically recorded in the FCC Part 32 6700 series of accounts. This series of accounts includes general and administrative costs, executive, legal, accounting, human resources, etc. However, in addition to these costs, Miscellaneous Rent Compensation Net expense, Property and Other Taxes, Other Operating Expenses, and a general support Capital Cost element were also included and considered to be partially avoided.

Q. PLEASE EXPLAIN WHY QWEST INCLUDED MISCELLANEOUS RENT COMPENSATION EXPENSES, OTHER OPERATING EXPENSES, PROPERTY AND OTHER TAXES, AND GENERAL SUPPORT CAPITAL COSTS IN ITS AVOIDED COST STUDY.

A. All of these costs are elements inherent in Qwest's Arizona retail rate structure. Therefore, under the parameters of the Act, they must be included in an avoided cost study. They constitute indirect costs; therefore, it is appropriate to apportion them using the *direct avoided cost/total direct cost* ratio I mentioned previously.

- Miscellaneous Rent Compensation Net includes Accounts 5240 through Account 5263. InterArea Rent Compensation (Accounts 5240.7/.8) is the net of: 1) "rental" amounts that other Qwest states pay to Qwest's Arizona operations for use by those states of assets that are part of the Arizona booked operations; and 2) amounts that Qwest's Arizona operations pays to other states for the use of corporate facilities located in each of Qwest's other states. The Net InterArea Rent Compensation (Rent Revenue/Expense) consists of reimbursement/payment for multi-state joint use support investment depreciation, property taxes, house services expense, rents and support investment capital costs. All of these cross-charged costs increase or reduce costs classified as indirect costs in the avoided cost study. Other Miscellaneous Rent Compensation accounts include amounts derived from the rental, or sub-rental, of telecommunications plant furnished apart from telecommunications operations (e.g. land and building space, outside plant or central office space, space provided in conduits, pole line space for attachments, etc.) This incidental compensation is utilized (that is netted, or offset, against total expenses) in order to recognize that associated costs have separate recovery mechanisms.

- Other Operating Expense (Account 7100) costs reflect certain costs related to employee benefits that are not recorded in the 6000 series of accounts per FCC Part 32 Accounting rules and directives. Although recorded in Account 7100, they are operating costs that are inherent in the rates subject to resale and should be included.
- Indirect General Support Capital Costs are the cost of money/capital return costs that are associated with buildings, furniture, office equipment, computers, and other general support assets.
- Property and Other Taxes are non-income tax amounts for property, gross receipts, and franchise and capital stock taxes. These are operating expenses inherent in resale service rates.

Description Of Embedded Avoided Cost Study Documentation

Q. ARE THE QWEST EMBEDDED AVOIDED COST STUDY AND DISCOUNT RESULTS PROVIDED AS EXHIBITS TO YOUR TESTIMONY?

A. Yes. As I mentioned earlier, Exhibit DMG - 1 provides a narrative description of the Qwest Embedded Avoided Cost Study. Proprietary Exhibit DMG - 2, Schedules 2 Composite and 2.1 through 2.5 depict the packaged / special service composite and the five basic service product category avoided costs and discount calculations. Proprietary Exhibit DMG - 2, Schedules 3.1through 3.8 provide further supporting calculations for Schedules 2 through 2.5.

Q. PLEASE EXPLAIN MORE FULLY THE EMBEDDED STUDY DOCUMENTATION AND THE SCHEDULES THAT ARE ATTACHED TO YOUR TESTIMONY.

A. As previously stated, the data employed in the Qwest Embedded Avoided Cost Study is taken from the Company's 1999 journalized results from operations. The initial data corresponds to the data reflected in the Company's FCC ARMIS 43-03 and 43-04 Reports. The Arizona CAAS/CARS data originate with this ARMIS data. However, the CARS reports, which depict intrastate product-specific operations, also incorporate state-specific treatment of costs, such as depreciation and employee-related benefit amortization costs. In this study, 1999 ARMIS and intrastate data, as adjusted for differences in state accounting treatment, were used as the starting point. These amounts are shown in Proprietary Exhibit DMG - 2, Schedule 2 – Composite, Column (b) and also in Column (a) of Schedule 3.1.

Q. PLEASE EXPLAIN PROPRIETARY EXHIBIT DMG - 2, SCHEDULES 2 THROUGH 2.5.

A. Proprietary Exhibit DMG - 2, Schedules 2 through 2.5, contain the results of the embedded cost study. These Exhibits show the various "<u>Avoided Cost</u> ***to*** <u>Total Cost</u>" percentage calculations applicable to each Product Category and the aggregate overall Composite Avoided Cost Percentage (ACP), as follows:

2	Packaged Service/Special Service Composite	10.46%
2.1	Business (Category 1)	9.41%
2.2	Toll (Category 2)	23.96%
2.3	Listings, CO Features, & Informational Services (Category 3	41.51%
2.4	Residence (Category 4)	4.19%
2.5	Private Line (Category 5)	6.44%

Q. PLEASE EXPLAIN THE SUPPORTIVE SCHEDULES CONTAINED IN PROPRIETARY EXHIBIT DMG - 2.

A. Proprietary Exhibit DMG - 2 also contains schedules that provide the additional detail necessary to calculate the avoided cost percentages shown above, as follows:

Schedule 3.1: Provides the individual financial statement detail for each of the excluded (non-resale) products. Under the general guidelines of the Federal Act, these services are subtracted from the "Total Intrastate" results to arrive at the

"Retail Intrastate" results, which are used in the avoided cost discount percentage calculations.

Schedule 3.2: Provides a "Retail" services revenue summary that excludes non-recurring revenues.

Schedule 3.3: Provides detail of the calculations of embedded avoided uncollectible revenue expense by product.

Schedule 3.4: Provides data relating to computer related costs recorded in Accounts 6124, 6724 and 6560 that are not avoided due to resale.

Schedule 3.4.1: Provides detailed information regarding the Operational Support Systems costs recorded in Account 6724 that are not avoided due to resale since they constitute costs incurred in the provision of resale. Furthermore, these costs are set aside in this study, because separate recovery mechanisms are being sought.

Schedule 3.5: Provides detailed information regarding Testing and Power costs.

Schedule 3.6 and 3.6.1: Provides detail of the avoided Customer Operations expense components by product.

Schedule 3.7: Provides the calculation of Depreciation Expense split between direct and indirect costs.

Schedule 3.8: Provides the calculation of Capital Costs on a product-specific, total retail service, split between direct and indirect, cost basis (including return and tax gross-up).

Q. WHY WERE CERTAIN QWEST REVENUES AND COSTS, SHOWN ON PROPRIETARY EXHIBIT DMG - 2, SCHEDULE 3.1, EXCLUDED FROM YOUR STUDY?

A. As I stated previously, these are services that are not subject to resale, as established either by the Act's definition (Intrastate Access, Third Party Billing and Collection, Wireless Interconnect Access (RCC and Cellular), and Mobile) or by virtue of the type of service offered (E911, wholesale PAL, Operator Services/DA, and Miscellaneous Other). Non-recurring business office costs and revenues for the resale services are also excluded in order to avoid contaminating the recurring discount calculations. These costs and revenues must be excluded, since the non-recurring costs associated with service order processing and other business office non-recurring costs, which will be incurred by Qwest on a resale basis, have their own unique characteristics and rates and are costs that are not avoided for existing customers, as described previously.[28]

Q. HOW WERE THE EMBEDDED RESALE DISCOUNTS CALCULATED?

A. The Qwest embedded resale discounts were calculated for the five basic service product categories, and the packaged / special service - composite, as a percent of "Total Avoided Cost" ***to*** "Total Operating Costs", where avoided costs and total operating costs include both *"Expenses"* and *"Capital Cost"* components. Inclusion of Capital Costs in developing both the numerator and denominator of the discount formula is key to properly calculating resale discounts. Capital costs must be properly analyzed and included in determining avoided costs, since they are costs which are very much a part of the total operating costs comprising the retail rates being discounted.

Q. WHAT ANALYSIS AND/OR DOCUMENTATION HAS QWEST PROVIDED AS PART OF ITS EMBEDDED AVOIDED COST STUDY REGARDING VOLUME / TERM CONTRACT SERVICES?

A. Exhibit DMG - 1 - Narrative Description includes an Addendum which specifically focuses on Qwest's already-discounted contract / term services. The exhibit

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28 Qwest's policy witness in this proceeding identifies the Qwest retail telecommunications services

Addendum reflects the results of several sensitivity analyses performed on the Qwest embedded avoided cost study that address "retailing" avoided cost differences associated with already-discounted services. The sensitivity analyses identify several avoided cost issues, demonstrating why application of full-price retail service discounts to already-discounted services would be inappropriate under the "rate" and "costs inherent in the rate" resale provisions of the Act.

Q. WHAT ANALYSIS AND/OR DOCUMENTATION HAS QWEST PROVIDED AS PART OF ITS EMBEDDED AVOIDED COST STUDY REGARDING OPERATOR SERVICE/DA SERVICES?

A. Proprietary Exhibit DMG - 6 develops an avoided cost resale discount for Operator Services/DA that could be used in lieu of Qwest's already existent Operator Service/DA wholesale tariff rate.

V. CONCLUSIONS AND FINAL RECOMMENDATIONS

Q. WHAT FINAL CONCLUSIONS AND RECOMMENDATIONS ARE YOU OFFERING IN CONNECTION WITH QWEST'S AVOIDED COST STUDY?

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that are subject to resale discounts under the terms of the Federal Act.

A. **First,** five product-category basic service resale discounts, rather than a single, composite discount, should be adopted in this proceeding. Creation and application of only a single aggregate discount is inappropriate given the fact that the cost characteristics of all services are not the same and that reseller purchases will not correspond to the retail mix presently sold by Qwest. Obviously, some services are capital intensive (such as Basic Residence Service), while other services are more labor intensive; and some services require more retailing sales and/or product management support in relation to total product costs than do other services. Therefore, the Commission should adopt the five basic service product categories reflected in the Qwest avoided cost study since they provide the differentiation required for proper product segmentation. The use of basic service product category discounts also averts the improper reseller arbitrage that becomes available with a single discount when resellers pick and choose which services to resell.

Qwest recommends that the Commission adopt Qwest's Embedded Avoided Cost and Resale Discount Study and the product category discounts listed below:

Category	Service Description	Discount
1	Basic Exchange Business	9.41%
2	Toll	23.96%
3	Listings, CO Features, & Informational Services	41.51%
4	Basic Exchange Residence	4.19%
5	Private Line	6.44%

Second, Qwest proposes that the Commission adopt the use of a composite discount of 10.46% for Packaged / Special Services such as CustomChoice™, ISDN, PBX, Centrex, and Advance Communications Services (ACS), such as Frame Relay.

Third, the Commission should find that if Operator Service/DA services are obtained from Qwest, the existing wholesale tariff should be employed or a separate resale discount of 7.00% should be applied to Operator Service/DA retail rates.

Fourth, the Commission should uphold the sanctity of Qwest's existing customer contracts. However, if the Commission determines that Qwest initiated and existing contracts are to be subjected to the Act's resale discount provisions, then the Commission should recognize that full-retail discounting, of an already discounted service, would facilitate unwarranted double discounting. To avoid double discounting, the Commission should further resolve to employ a separate avoided cost analysis in the establishment of any resale discounts.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.

D. M. (MARTI) GUDE - HAS TESTIFIED ON THE SUBJECT OF EMBEDDED COST STUDIES IN THE FOLLOWING:

STATE	CASE/ DOCKET NO.	CASE NAME	DATE OF TESTIMONY	DATE OF CROSS
Iowa	RPU-88-9	Rate Design Case	D - 7-29-88 * R - 12-13-88 *	1-11-89
Iowa	RPU-88-6	Iowa General Rate Case Rehearing	R - 6-8-89	6-22-89
Iowa	RPU-91-4	In the Matter of the Petition of the Consumer Advocate Division of the Department of Justice Requesting Reduced Rates for U S WEST Communications, Inc.	D - 9-25-91	Settlement reached prior to Hearing
Iowa	TCU-93-3	In Re: McLeod Telecommunications, Inc. (Resale of Centrex Plus)	D - 8-25-93	9-13-93
Iowa	RPU-93-9	In Re: U S WEST Communications, Inc. (Iowa Earnings Investigation)	D - 11-30-93 SR - 2-21-94	3-23-94
Iowa	RPU-95-11	In Re: U S WEST Communications, Inc. (Rate Rebalancing)	D - 9-22-95 R - 2-20-96	Testimony Withdrawn and Proceeding Terminated
Minnesota	P-421/CI-86-354	NWB Earnings Investigation	R - 9-28-87 *	12-87
Nebraska	C-1874	In the Matter of the Application of U S WEST Communications, Inc. for Authority to Increase its Residential Basic Local Exchange Rates Pursuant to Neb. Rev. Stat. Section 86-803(9).	D - 11-25-98 R (oral) - 12-17-98	12-17-98
North Dakota	10,823	IMTS Deregulation	D - 1-13-88 *	1-20-88
North Dakota	PU-314-99-119	U S WEST Communications, Inc. SB 2420 Residential Price Changes Investigation	D - 5-30-2000	6-7-2000

D. M. (MARTI) GUDE - HAS TESTIFIED ON THE SUBJECT OF EMBEDDED COST STUDIES IN THE FOLLOWING:

STATE	CASE/ DOCKET NO.	CASE NAME	DATE OF TESTIMONY	DATE OF CROSS
Oregon	UX 22	In The Matter of the Petition of U S WEST Communications, Inc., To Exempt From Regulation U S WEST's IntraLATA Toll Service	D - 8-9-99	Petition Withdrawn by USWC
South Dakota	F-3848, 3849, 3850	In the Matter of the Inquiry into Northwestern Bell Telephone Company's Allocation of Revenues, Investment, and Expenses Among All Services Offered	D - 9-1-90 SR - 11-15-90	12-4-90
South Dakota	TC99-098	In the Matter of the Petition of U S WEST Communications, Inc. to Reclassify U S WEST's Directory Assistance Service	D - 9-20-99	Settlement reached prior to Hearing

* Filed as D. M. Conley

D = Direct
R = Rebuttal
SR = Surrebuttal
Sup = Supplemental

A. Double counting of avoided costs would occur if full-service avoided retail costs were used in discount calculations for Qwest initiated term discounted and/or contract services when the lower rates for these services already account for reduced retail cost efforts. In keeping with the resale discount provisions of the Act and to avoid double discounting, already discounted services require a separate avoided cost analysis, which properly considers only the costs that are inherent in and comprise the discounted service rates.

Additionally, contract service discount consideration must recognize that avoided retailing costs for "existing" Qwest contracts would be minimal, if any. For Qwest initiated/existing contracts, "retail marketing" costs include costs expended up-front in initiating, designing and facilitating the contract. Because Qwest incurs these costs up front, it will not avoid them if customers terminate their existing contracts prematurely by transferring their business to resellers. Although there are retailing costs that remain inherent in the contract service rate, they constitute sunk costs that are not avoided by Qwest. Accordingly, they should not be used in determining a resale discount to apply to existing contract rates that already reflect reduced-retail pricing.

Resellers would benefit greatly from the up-front retailing efforts of Qwest since a reseller would not duplicate the costs incurred by Qwest if existing contracts were merely transferred. Only if, and when, new contracts are actually initiated by resellers will a reseller's retailing costs be comparable to Qwest's. If and when resellers initiate their own volume/term discount contracts, they should do so from the tariffed rate less the resale discount. Discounting Qwest's reduced-retail volume/term contract rates by applying full-retail avoided cost discount rates would be a misapplication of the full-retail discount rates, and it would not be in compliance with the "rate" and "cost inherent in the rate" language and directives of the Act.

• **<u>Reliance On A Multiple Discount Model – Operator Services/Directory Assistance</u>**

Q. WHAT CONSIDERATIONS ARE IMPORTANT IN DETERMINING IF A RESALE DISCOUNT IS APPLICABLE TO QWEST'S OPERATOR SERVICE/DA SERVICE?

A. Of primary concern is whether resellers will be purchasing Qwest's Operator Service/Directory Assistance (DA) at all. Many CLEC's and resellers have demonstrated or indicated that they will self-provision or buy these services through other competing ILEC's or other providers. If Qwest service is not purchased, retailing related costs associated with the service should not be included and allowed to contaminate the resale discount calculations for Qwest's other services. If Qwest's Operator Service/DA service is to be purchased, and Qwest's existing wholesale carrier rates are not employed, then a separate and unique avoided cost analysis and resale discount would be required in order to recognize that when the service is provided, Qwest will not avoid any of the direct costs of providing Operator Service/DA.

• Reliance On A Multiple Discount Model - Summary

Q. HAS QWEST FILED FOR AND/OR RECEIVED ORDERS TO IMPLEMENT MULTIPLE RESALE DISCOUNTS, RATHER THAN A SINGLE COMPOSITE DISCOUNT, IN COST DOCKET ORDERS RECEIVED IN OTHER JURISDICTIONS?

A. Yes. Multiple resale discounts, rather than a single composite discount, have been requested and/or ordered in several states. In fact, only some of the very early arbitration cases developed an interim single composite discount and only a very few single discounts are in effect today. In all of its cost docket cases filed to date, Qwest has requested multiple resale discounts. Orders received in other states, such as Colorado, Utah, Nebraska and Iowa, require the use of product category differentiated discounts.

Q. PLEASE SUMMARIZE WHY THE COMMISSION SHOULD SET MULTIPLE DISCOUNTS IN THIS PROCEEDING.

A. The Commission should set multiple discounts in order to recognize that:

- Qwest has multiple services and rates that resellers will avail themselves of under the provisions of the Act;
- the proportion of retailing costs comprised in various rates vary dramatically among services offered by Qwest;
- resellers make no pledge, and are not bound, to purchase all Qwest retail services in the same "composite" mix currently provided to Qwest customers;
- the Act provides the foundation for unique category discounts, and the FCC acknowledged that multiple discounts may be appropriate;
- a single discount facilitates reseller arbitrage;
- packaged, special, and miscellaneous services should be treated separately from basic services;
- volume / term contracts initiated by Qwest constitute already discounted retail services which have different avoided costs than comparable full-retail services; and
- Operator Service/DA service has separate rates, and many resellers will self-provision, or use alternative providers other than Qwest, in providing this service to its customers.

IV. QWEST EMBEDDED AVOIDED COST STUDY

Overview

Q. HAVE YOU PROVIDED DOCUMENTS SUPPORTING THE QWEST EMBEDDED AVOIDED COST STUDY AND THE DISCOUNTS THE STUDY PRODUCES?

A. Yes. Exhibits to my testimony contain documentation describing the Qwest embedded avoided cost study, the resale discount calculations, and the results. Exhibit DMG - 1 provides a narrative description of the study. Proprietary Exhibit DMG - 2 depicts the calculations and results of the study.

Guidelines For Preparing Qwest's Embedded Avoided Cost Study

Q. WHAT BASIC GUIDELINES UNDERLIE THE QWEST EMBEDDED AVOIDED COST STUDY?

A. Two basic guidelines were recognized. First, the Act provides two key guiding principles:

- Section 251(c)(4) of the Federal Act requires that incumbent LECs offer for resale at wholesale rates any telecommunications service that the carrier provides at retail to subscribers who are not telecommunications carriers.

- Section 252(d)(3) states that State Commissions shall determine wholesale rates on the basis of retail rates charged to subscribers for the

> telecommunications service requested, excluding the portion thereof attributable to any marketing, billing, collection, and other costs that will be avoided by the local exchange carrier.
>
> (Emphasis Added).

Second, as the Act implies and the FCC's Order correctly recognized:

- each retail service must meet the statutory definition of a telecommunications service that is provided at retail to subscribers who are not telecommunications carriers.[12]

Neither the Act, nor the FCC Order, prescribed a specific listing of services that are subject to the resale requirement, and neither provided a detailed or absolute methodology for determining avoided costs.

Q. IN ADDITION TO THE BASIC PRINCIPLES YOU JUST MENTIONED, WHAT ADDITIONAL GUIDELINES DID QWEST EMPLOY TO DEVELOP ITS EMBEDDED COST STUDY?

A. Additional guidelines for preparing the Qwest embedded avoided cost study included:

1. ***Employ an approach that reflects the Federal Act and/or any valid FCC directives for identifying avoided Direct and Indirect cost components for services subject to resale.*** In preparing its embedded avoided cost study, Qwest patterned its cost study format to coincide with a general format that has been

12 FCC 96-325 The First Report & Order in the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Section VIII. Resale, para. 871 and Footnote 2088 at page 415.

previously filed in many of Qwest's jurisdictions. Although not identical, this format recaps and depicts:

(a) Total Intrastate booked revenue and operating expense components;

(b) "Retail" revenue, expense and capital cost components (exclusive of non-resale services);

(c) the split of direct and indirect expenses and capital costs;

(d) the avoided cost percentage assumptions for separate *"retail"* service direct and indirect cost elements; and

(e) the resulting avoided cost estimates and calculated resale discounts.

Qwest embedded study conclusions were derived independent of FCC interconnection Order directives or assumptions. As a result of this independent analysis of Qwest data, and only where appropriate, do Qwest embedded avoided cost study conclusions coincidentally reflect FCC Interconnection Order directives or assumptions. For example, both the Company's study and the FCC's study determined that Plant Specific and Non-Plant Specific costs were costs that are not avoided due to resale. Additionally, for purposes of the Company's filing in this proceeding, and as in the original FCC study, general support costs, which are indirect costs, were conservatively considered avoided in proportion to avoided direct costs.[13] This is a conservative approach in that such costs may not actually

13 FCC 96-325 The First Report & Order in the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Section VIII. Resale, para. 918 and 919.

be avoided.

2. ***Employ "Intrastate Product-specific" data.*** The first step in the avoided cost analysis is to identify all the costs to include in the analysis. In this regard, it is important to isolate intrastate operations in order to properly evaluate embedded avoided costs and to calculate cost discounts for specific and disaggregated intrastate resale services.

Exchange Access Service is not subject to discount under the requirements of Section 251(c)(4) of the Act because it is a wholesale carrier service, not an end-user retail telecommunications service.[14] Therefore, elimination of all Interstate Access revenue and Part 36/69 separated costs (including elimination of all interstate CCL loop costs and the End-User SLC[15]) is essential in identifying the body of costs to include in the analysis. Elimination of these costs from the analysis also is consistent with the fact that state commissions only have jurisdiction over intrastate, not interstate, costs.[16]

Since the current Qwest - Arizona intrastate rates were originally established based

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14 FCC 96-325 The First Report & Order in the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Section VIII. Resale, para. 873, 874 and 875.

15 FCC 96-325 The First Report & Order in the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Section VIII. Resale, para. 873, 874 and 984.

16 Section 252(d)(3) of the Act requires that the identified avoided costs be inherent in the rates discounted. Interstate costs are not inherent in intrastate rates.

on the jurisdictional intrastate cost assignments resulting from the FCC's Part 36/69 separations procedures,[17] and since the prices we are dealing with are intrastate, the embedded avoided cost study and embedded discount calculations must reflect corresponding intrastate data. In other words, only intrastate costs should be included in the analysis and discount calculation.

3. ***Isolate and exclude "Non-Resale Services" from the analysis of avoided costs and the calculation of discounts.*** As the Act requires, non-resale services must be removed from an avoided cost study so that the avoided costs identified, and the discount calculations, are not contaminated and artificially inflated or deflated for services that are not subject to resale discounting. Services, such as Intrastate Access (Interstate is jurisdictionally removed automatically by starting the analysis with Intrastate operations), Intrastate Third Party Billing and Collection (Interstate is already removed), Operator Services/Directory Assistance and Non-recurring charges, have been excluded in developing the Qwest embedded avoided cost study for recurring rate discounts, since these services are not subject to the discount provisions of the Act and/or their inclusion would erroneously contaminate recurring rate discount calculations. (See Schedule 3.1 of Proprietary Exhibit DMG - 2)

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17 See CFR 47, Part 36 and Part 69.

4. ***Use appropriate Company/State/Product-specific assumptions and embedded cost data necessary to obtain the most meaningful embedded avoided costs and resale discount results.*** The Qwest embedded study employs Qwest - Arizona, product-specific, intrastate, CARS (Cost Accounting Reporting System) data and replaces the vacated FCC generic industry assumptions regarding avoided costs with Qwest specific data. [18]

The FCC's generic avoided cost assumptions were never Qwest or Qwest - Arizona specific, nor were they product-specific. Rather, they were merely broad compromise factors created from comments collected from a variety of agencies, resellers, and companies other than Qwest. Specific Qwest - Arizona intrastate data must be used wherever possible to create resale discounts for Qwest - Arizona intrastate rates. The use of the FCC's Automated Report Management Information System (ARMIS) public information, the FCC's generalized industry-wide 90% avoided cost default proxy factors (applied to entire, unanalyzed account balances), the default "Total 14 State" discount result, and the use of aggregate product information are clearly inappropriate for calculating meaningful resale discount percentages when more detailed and specific Qwest - Arizona data is available.

5. ***Incorporate Qwest's previous experience with its <u>non-resale</u> Access Product in developing avoided costs for resale services.*** Prior to the passage of the Act,

18 United States Court of Appeals decision in case No. 96-3321, dated July 18, 2000, at page 16 – 18

Qwest had never had to resell its retail telecommunications products on a large scale; therefore no meaningful historical actual avoided cost data existed. Where Qwest now has post-Act historical wholesale experience (i.e. Customer Operations-Sales expense), actual data is employed in the study. In areas where an absence of tracking and actual data still exists, Qwest's wholesale Access product experience provides a reasonable surrogate and foundation for approximating avoided costs. In this study the access surrogate is used in evaluating the Product Management costs recorded as Customer Operations/ Marketing costs and in determining Uncollectibles expense for resale services which will be offered in a wholesale-type environment.

Basic Strengths And Attributes <u>Of The Qwest Embedded Avoided Cost Study</u>

Q. WHAT ARE THE BASIC STRENGTHS AND ATTRIBUTES OF THE QWEST AVOIDED COST STUDY?

A. The Qwest embedded study clearly addresses the requirements of the Act. The particular strengths of the study include:

(1) The study is prepared from Qwest's booked financial records. Specifically, the study is based on 1999 actual Arizona operating results, with data that are

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vacated FCC avoided cost definitions and associated rules.

consistent with 1999 FCC ARMIS Reports where appropriate, detailed sub-account records, special functional cost analysis/time studies and the Company's embedded cost accounting system, CAAS/CARS.

(2) The study utilizes intrastate data, which correspond with the historic intrastate rate setting process and reflect the fact that intrastate retail rates are comprised of intrastate retail costs.

(3) The study removes costs inherent in its USOA account balances which are associated with non-resale / excluded services (e.g. Intrastate Access, Third Party Billing and Collection, Wireless (RCC and Cellular) Interconnect Access, Operator Services/DA, Non-recurring, and E911) in compliance with the language of the Act. Additionally, Operational Support System (OSS) costs are excluded from the study since they constitute reseller related wholesale costs that are not avoided, and they require and are being addressed via a separate recovery mechanism.

(4) The study also incorporates the impacts of jurisdictional adjustments for items such as Arizona-specific depreciation.

(5) The study incorporates all cost elements comprised in Arizona rates, including cost data for Capital Costs (both direct and indirect), net InterArea Rent

Compensation, and Property and Other Taxes.

(6) The study analyzes Qwest costs and account balances in detail to determine with specificity the costs Qwest will avoid instead of relying on broad-brush, or vacated FCC 90% "proxy", cost avoidance factors which are not applicable to entire account balances or supportable in regard to Qwest operations.

(7) The study also provides avoided cost discount percentages for multiple service categories, rather than only a single avoided cost discount percentage, which would lend itself to resale arbitrage.

These attributes ensure that Qwest's embedded avoided cost study complies with the Act and addresses the United States District Court For The District of Arizona remand decision in U S WEST v. Jennings. Because the study fully complies with the Act, and accurately estimates Qwest's avoided costs, the Commission should use the study to establish the avoided cost discounts for Qwest.

Records Employed by Qwest To Develop Resale Discounts

Q. WHY DID QWEST EMPLOY DETAILED ARIZONA-SPECIFIC DATA, RATHER THAN RELY SOLELY ON FCC ARMIS DATA, TO DEVELOP ITS EMBEDDED AVOIDED COST STUDY?

A. Relying solely on ARMIS data would not permit a comprehensive, State specific, intrastate product-specific, analysis of costs. ARMIS data contain high level, summary information arrayed for FCC and general public consumption. ARMIS data contain only aggregated information for the intrastate products offered by Qwest. Therefore, Arizona Intrastate ARMIS data would be too general in nature to properly identify even the revenues associated with resale services, let alone avoided retailing costs for Arizona operations. ARMIS certainly does not provide enough intrastate detail to eliminate non-resale service and cost information, as required by the Act.

Q. WHY DOESN'T ARMIS PROVIDE ALL THE NECESSARY INFORMATION TO IMPLEMENT THE RESALE DISCOUNT CALCULATION PROVISIONS OF THE FEDERAL ACT?

A. The FCC's ARMIS reports were never designed for the purpose of determining the intrastate wholesale prices that the Act requires. It constitutes only one of many data models that summarize information from many data sources regarding telephone company operations.

The ARMIS reports contain interstate product data for FCC use and public consumption but do not lend themselves to the more refined intrastate product-specific analysis that is necessary to establish appropriate resale discounts to be applied to specific Arizona intrastate rates. The ARMIS 43-03 - Joint Cost Report, provides annual data for each account prescribed under the FCC Part 32 Uniform Systems of Accounts (USOA) for "Total State" operations prior to FCC Part 36 jurisdictional separation between Interstate and Intrastate operations. The ARMIS 43-04 - Access Report, further delineates the 43-03 Report Subject-to-Separations amounts by splitting revenues, costs and investment between Intrastate and Interstate operations, as well as the various interstate components (products/rate elements) of Interstate Access and Billing and Collection services. The jurisdictional split reflected in the 43-04 report reflects compliance with FCC Part 36 and Part 69 rules.

However, neither of these reports, nor any of the other ARMIS Reports, refines the Company's reported financial data to reflect specific intrastate products. None will assist in isolating intrastate "non-resale" services that must be excluded from resale discount calculations. Although the FCC originally utilized "Total 14 State U S WEST " ARMIS data to prepare its interim overall default resale discount for application in all Qwest states, the FCC also made it very clear that this "quick and dirty" analysis was used only to set interim default ranges in the absence of a more detailed avoided cost study. Thus, it is very clear that more specific Qwest - Arizona, product-specific, intrastate data can, and should, be used. Qwest has provided the Commission such information in this proceeding.

Q. SINCE ARMIS DATA IS TOO GENERAL, WHAT QWEST EMBEDDED COST DATA SHOULD BE USED TO PERFORM THE EMBEDDED AVOIDED COST STUDIES IN THIS PROCEEDING?

A. The Commission should rely upon Qwest's CAAS (Cost Accounting Allocation System)/CARS (Cost Accounting Reporting System) data. CAAS/CARS is the Company's cost accounting process that produces detailed, product-specific, embedded cost reports. CAAS reports provide product/service financial information on a total state (interstate + intrastate) basis.[19] CARS provides the same product/service financial information on an intrastate, jurisdictionally separated, basis.

I would note that the Company's CAAS/CARS embedded cost report model and the FCC's ARMIS report model each identifies jurisdictional product information: CAAS for total state services, ARMIS for interstate services, and CARS for intrastate services. In addition, these systems also share a common data source, the FCC Part 32 booked records of the Company, and many common cost allocation and reporting methodologies, including Part 64 unregulated costing methods. However, the FCC's ARMIS reports were never designed or intended to identify and array <u>intrastate</u> product-specific data. Only the Qwest CAAS/CARS process provides this intrastate

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19 An overview of the assignment methodologies used in CAAS as well as a description of the purpose, objectives and cost assignment principles used in the system are included in Exhibit DMG - 5 of my testimony.

information for Qwest.

A properly designed embedded avoided cost study requires an input data source containing correct and relevant product and cost information. In developing an embedded avoided cost study for determining Qwest's intrastate retail service discounts, it stands to reason that detailed Qwest *intrastate* product input data sources should be used. Therefore, the use of CAAS/CARS data, rather than only the aggregated ARMIS data, is clearly the correct choice.

Qwest's CAAS/CARS embedded cost data is familiar to state regulators. It has been used in many Qwest jurisdictions where state commissions have required the company to provide embedded cost support and/or detailed product information on an embedded basis. In addition to use and review by state regulators, the Company's CAAS/CARS data and procedures have been periodically audited by the Company's external auditors (e.g. Coopers and Lybrand and Arthur Andersen).

Embedded Cost Study Avoided Cost Percentages

Q. AFTER IDENTIFYING THE COST DATA UPON WHICH TO BASE THE AVOIDED COST DISCOUNT CALCULATIONS, WHAT IS THE NEXT STEP FOR CALCULATING THE DISCOUNTS?

A. The next step is to analyze the categories of costs and to determine what percentage of costs in those categories will be avoided when Qwest sells retail telecommunication services on a wholesale basis.

Q. PLEASE EXPLAIN YOUR EARLIER STATEMENT WHERE YOU INDICATED THAT ACTUAL AVOIDED COST DATA IS UNAVAILABLE FOR IDENTIFYING AVOIDED COSTS OR DEVELOPING AVOIDED COST PERCENTAGES FOR USE IN AN EMBEDDED AVOIDED COST STUDY.

A. The need for identifying <u>avoided</u> "retailing" costs stems from the resale provisions of the Act, and, thus, there had been no historical requirement to uniquely identify such costs in the past. In limited areas where unique data is not tracked or available (e. g. Product Management and Uncollectible), costs for the provision of Qwest's wholesale carrier access service provide a reasonable surrogate for determining resale provisioning cost requirements and thus identifying net avoided retailing costs.

Q. WHY DO CARRIER COSTS RELATING TO QWEST'S ACCESS SERVICE PROVIDE A REASONABLE SURROGATE FOR PRODUCT MANAGEMENT AND UNCOLLECTIBLE RESALE ACTIVITIES AND COSTS THAT WILL BE INCURRED TO PROVISION RESALE?

A. As my Exhibit DMG – 3 indicates, Product Management costs for the resale of retail telecommunications service will be very similar to those incurred for providing wholesale Access Service. A variety of product management type functions are "wholesale" in nature and would be required (not avoided) even if there were no retail operations, because Qwest's product managers focus on developing and bringing its products to the market place.

For years, U S WEST / Qwest has employed product managers to serve the wholesale Access service needs of interexchange carriers. Today Qwest's "Carrier" market unit is dedicated to serving the access needs of interexchange carriers in order to provide these customers with "wholesale" switched and dedicated access products. This market unit incurs wholesale costs that are characterized and recorded as "Marketing - Product Management" costs under Part 32 accounting rules. Carrier Access actual recorded costs demonstrate that there are numerous product management cost functions performed in providing <u>wholesale</u>, not retail, services today.

The comparison of total U S WEST / Qwest retail services product management costs and Carrier Access service actual product management costs facilitates the identification of the level of product management costs that would be avoided when providing retail services on a resale, "wholesale", basis. By comparing total incurred product management costs, by retail product category, with incurred Carrier Access product management costs in the State, avoided costs percentages can be determined for each product group.

For reseller uncollectibles the use of carrier uncollectibles as surrogate is a conservative approach. Reseller uncollectibles will be similar, if not higher, than those experienced with carriers due to the number of resellers and the churn rate of resellers and their customer base.

Q. WHAT PERCENTAGES OF "RETAILING" COSTS DOES QWEST'S STUDY ASSUME THE COMPANY WILL AVOID SELLING SERVICES AT WHOLESALE?

A. The following avoided cost percentages were determined to be applicable to Qwest "retail" intrastate service expenses. That is, the following percentages are applicable only to the portion of Qwest's intrastate account balances remaining after identifying and removing non-resale/excluded service costs (e.g. Intrastate Access, E911, Wireless (RCC and Cellular) Interconnect Access, Intrastate Third Party Billing and Collection Services, Operator Services/Directory Assistance, and Non-recurring services).

Expense Category	Costs Avoided
Marketing - Product Management	0 - 64%
Sales	2 - 99%
Advertising	50%
Customer Services -	
Qwest Billing and Collection	82 - 99%

Uncollectibles	88 - 89%

A range is depicted for certain expense types since product categories vary in the amount of retailing costs that are incurred. For example, Qwest's study indicates that Basic Exchange Residence product management costs are 0%[20] avoided versus Qwest Central Office (Vertical) Services product management costs, which are 64%, avoided.

Discussion and Analysis Of Avoided Costs

Q. IN DEVELOPING THESE AVOIDED COST PERCENTAGES, WHAT TYPES OF COSTS WERE CONSIDERED TO BE AVOIDED COSTS IN THE QWEST EMBEDDED AVOIDED COST STUDY?

A. The Qwest study identifies "direct" retail (expense and capital-related) costs as well as supporting "indirect" retail (expense and capital related) costs. These costs include

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20 Where Qwest's Access product history indicates that wholesale product management would equal or exceed a retail product group's potential avoided retailing costs, avoided cost factors were conservatively set at 0% rather than employing assumptions which would reflect incremental cost increases which may occur due to resale. Including incremental costs would result in lower resale discounts.

Customer Operations costs, End-User Uncollectibles expense, and a proportionate share of a variety of indirect costs (i.e. common overhead type costs).

Q. WHAT TYPE OF COSTS ARE CONTAINED IN QWEST'S CUSTOMER OPERATIONS ACCOUNTS?

A. Qwest Customer Operations costs are recorded in several USOA accounts defined by the FCC's CFR 47, Part 32, accounting rules. Customer Operations costs are recorded in two main accounts, Account 6610 - Marketing, and Account 6620 - Customer Services; both of which have additional sub-accounts.

Account 6610 has three sub-accounts consisting of specific types of marketing costs:

- Account 6611 - Product Management,
- Account 6612 - Sales, and
- Account 6613 - Advertising.

Account 6620 is comprised of sub-accounts containing three types of customer operations costs:

- Account 6621 - Call Completion,
- Account 6622 - Number Services, and

- Account 6623 - Customer Services.

Q. WHAT INITIAL CONCLUSIONS WERE REACHED REGARDING THE LEVEL OF QWEST'S RETAIL "MARKETING" COSTS THAT MAY BE AVOIDED?

A. Of the three "Marketing" cost elements in Account 6610, Qwest will still continue to incur a very significant portion of its product management expenses in the delivery of services provided to resellers. As a result, only a portion of these expenses will be avoided. Product sales costs comprise a large portion of Qwest's marketing costs. Many, but not all, of Qwest's sales costs will be avoided in facilitating resale. A substantial portion of Qwest's product advertising in the market place is largely informative and thus is not market share/volume sensitive. Wholesale and retail operations both derive a benefit from this type of Qwest advertising, therefore, only a portion of these costs should be attributed to retail operations avoided costs.

I hasten to point out that a portion of the Qwest product management, sales, and advertising costs also relate to Qwest's <u>non-resale</u> services (e.g. Intrastate Access, Wireless Interconnect Access, E911, Mobile, and Public Access Lines). None of the non-resale service related costs can be considered to be avoided if the cost analysis is to be in compliance with the language and intent of the Federal Act.

Q. IN REGARD TO THE MARKETING (6610) ACCOUNTS, COULD YOU DESCRIBE IN MORE DETAIL WHY QWEST WILL CONTINUE TO INCUR SIGNIFICANT MARKETING - PRODUCT MANAGEMENT COSTS IN THE DELIVERY OF WHOLESALE SERVICE TO RESELLERS?

A. Qwest will still continue to incur product management costs associated with its current non-retail services at the present levels and, as Qwest's access service experience indicates, Qwest will obviously incur product management expenses in serving resellers. While Qwest recognizes that product management functions and costs may change in a wholesale environment, they will certainly not go away completely just because a service is provided on a wholesale basis. Analysis of these costs indicates that although Qwest product managers do some work that would apply specifically to retail offerings (e.g. setting up Qwest specific sales promotions, etc.), these same product managers also perform product development work that supports wholesale/resold services. For example, costs associated with developing and implementing most product methods and procedures and rate list filings will apply whether the service is provided on a retail or wholesale basis. Also, while Qwest will avoid some retail product management expenses, it will now incur new product management expense to serve the resale market.[21] Exhibit DMG - 3 provides a listing

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21 The FCC Order indicates that new wholesale costs such as these should be netted against avoided costs (FCC 96-325 The First Report & Order in the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Section VIII. Resale, para. 928).

of various product management functions that Qwest performs today that correlate with wholesale carrier and/or reseller interface functions. Since many of these functions are currently performed for wholesale carrier services and they must be performed for resale, only a portion of product management costs can be considered avoided due to pure retail efforts.

Q. WHAT CONSIDERATIONS AND ANALYSIS WERE REQUIRED REGARDING QWEST'S SALES COSTS?

A. A portion of the Sales - Account 6612 costs relating to end-user contact may be diminished, but not all Sales costs will be eliminated. Reduced end-user costs have been replaced by reseller contact costs incurred by Qwest in order to interface with and provide resale and unbundled services to resellers and CLEC's. As Qwest loses "retail end-user customers" and associated "Sales" costs, it picks up numerous resellers, as the "replacement customers", and continues to incur "Sales" costs for similar functions. For example, Qwest sales employees will have to negotiate contracts with the resellers and CLEC's and field, investigate, and respond to their inquiries and requests. Exhibit DMG - 4 provides a more detailed review of sales functions required in a wholesale environment.

Therefore, Qwest's actual experience and recorded costs for dealing with reseller and unbundled-related cost functions need to be recognized and netted against end-user avoided retail functions when determining the avoided cost percentage for Account 6612 Marketing - Sales. For purposes of this study, reseller and unbundled service related sales costs have been identified and they offset end-user retail costs avoided. Additionally, certain of Qwest's sales costs will not be avoided due to resale, since they relate to services not subject to resale discount.

Q. HOW ARE ADVERTISING COSTS HANDLED IN THE QWEST EMBEDDED AVOIDED COST STUDY?

A. Product advertising costs were separately evaluated. Most product advertising is not market share/volume sensitive. As a result, product advertising performed by Qwest, for services that can ultimately be resold by resellers, benefits Qwest and resellers, reducing a reseller's need to duplicate such costs.[22] An example of such advertising costs are Qwest's "*69 - Last Call Return" public advertising campaigns. Qwest equipment facilitates Qwest customer use as well as use by the customers of resellers. Revenue collections for Qwest and resellers are enhanced whenever their end-user customers become informed about, and subsequently use, this advertised service. Since product advertising is aimed at increasing service penetration, and is informative to the general marketplace, it should not be considered a totally avoided cost due to resale. However, considering that product advertising impacts Qwest

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22 Although resellers will be reselling a variety of Qwest retail telecommunications services, resellers will not be duplicating Qwest advertising of its trademarked services. However, resellers' customer awareness and penetration will be enhanced as a result of Qwest's advertising of such services.

customers, as well as reseller customers and resellers themselves, Qwest's study treats these costs as partially avoided. Additionally, certain of Qwest's advertising costs will not be avoided due to resale, since they relate to services not subject to resale discount.

Q. WHAT FINAL CONCLUSIONS DID QWEST REACH WITH REGARD TO ITS "MARKETING" COSTS?

A. Qwest concluded that the FCC's overly simplistic, generic 90% avoided cost factor assumption for all the Qwest "Marketing" costs summarized in Account 6610 was erroneous, since more specific Qwest Arizona sub-account and detail support information was available indicating that separate and lower percentages were appropriate. Therefore, the Qwest embedded study develops and employs a separate factor for each resale product group evaluated and for each of the three components of total Marketing expense - Product Management, Sales, and Advertising.

Once developed, these percentage factors are applied to the intrastate retail service portion of the account balances, on a product-category basis in the embedded study.[23] <u>I emphasize that the percentages developed are only applicable to the intrastate retail</u>

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[23] See Qwest Embedded Study Proprietary Exhibit DMG - 2, Schedules 3.6 and 3.6.1.

service portion of the account; they would be too high to apply to the entire account balance.

Q. WHAT INITIAL CONCLUSIONS WERE REACHED REGARDING QWEST'S "CUSTOMER SERVICE" COSTS WHICH MAY BE AVOIDED?

A. Customer Services costs -- Accounts 6621 and 6622 -- include operator service and directory assistance related costs. These costs must either be totally eliminated from the study or included and treated as "not avoided" in order to avoid contaminating recurring retail discount calculations with costs that are not inherent in retail recurring rates. Simply put, and as other commissions have recognized, most costs associated with operator service and directory assistance are not part of Qwest's recurring basic service retail rates; therefore, they should not be included in calculating discounts to apply to retail basic service rates. In addition, costs associated with basic operator intercept and customer name and address data base maintenance are functions that will not be avoided in provisioning resale.

Account 6623 consists of two primary types of expenses: Billing and Collection and Business Office Non-Recurring costs. A proper analysis of the billing and collection portion of the account must recognize that there are costs associated with the following services: Intrastate Access, Wireless Interconnect Access, Public Access Lines (PAL), Billing and Collecting for Third Parties, Independent Company Billing and Collecting, and E911. These services are not subject to resale and/or Qwest will not have any avoided costs associated with them. Accordingly, the costs associated with these services are excluded from the discount calculations.

Non-recurring costs recorded in Account 6623 also need special consideration. They constitute sunk cost charges that are separate from recurring service end-user and interconnection / CLEC billing. Existing customers do not incur non-recurring charges on a routine or monthly basis; therefore, including them in calculating recurring service discounts is improper and would violate the Act's requirement that only costs included in the retail rates are to be treated as avoided. Furthermore, if existing customers are transferred to resellers, Qwest's non-recurring charge activities are sunk costs that are not avoided.

Q. WITH REGARD TO THE CUSTOMER SERVICE (ACCOUNT 6620) EXPENSES, YOU INDICATED THAT OPERATOR SERVICE/DA COSTS COMPRISE A PORTION OF THE CUSTOMER OPERATIONS EXPENSES THAT SHOULD BE EXCLUDED FROM THE EMBEDDED AVOIDED COST STUDY. WHY SHOULD THESE COSTS BE HANDLED THIS WAY IN AN AVOIDED COST STUDY?

A. Operator Service/Directory Assistance expenses are not included in the costs for basic local exchange service. Operator Service/DA services have their own rate lists and/or result in separate charges. Furthermore, as many resellers have indicated, they intend to self-provision these services through competing ILEC's or other providers. Therefore, the costs for these services should not be considered "avoided" in developing recurring rate discounts for other services. Instead, they should be eliminated entirely from the recurring rate resale discount analysis. Otherwise, the discounts for retail services would be contaminated and erroneously inflated, creating a double-dip in revenue loss.

In the event that resellers choose to purchase Operator Service/DA services, two alternatives are available. The Commission could designate that resellers purchase Operator Service/DA from Qwest via its presently established carrier wholesale tariff or the Commission could set a separate resale discount from a separate avoided cost analysis as Proprietary Exhibit DMG - 6 depicts.

Q. YOU ALSO INDICATED THAT NON-RECURRING COSTS COMPRISE A PORTION OF CUSTOMER OPERATIONS EXPENSES AND THAT THEY SHOULD BE EXCLUDED FROM THE EMBEDDED AVOIDED COST STUDY. WHY SHOULD THESE COSTS BE EXCLUDED?

A. Customer Service costs relating to non-recurring charge compensation and procedures require special consideration and exclusion from the discount calculations. Traditional, "embedded", non-recurring charges for the establishment of service are separate and unique from retail telecommunications services that are subject to resale. The costs are by definition, **non**-recurring in nature, and they are not billed to each and every customer, each and every month, like recurring basic and toll services are. They have their own rates/pricing elements and are charged only when applicable. Since existing customers are not regularly and routinely billed for non-recurring charges, creating contaminated resale discounts for recurring services by including non-recurring cost impacts would be misguided.

The vast majority of non-recurring costs constitute sunk costs incurred by Qwest in establishing service for its existing end-user customer base. These costs will never be avoided if Qwest customers subsequently transfer to a reseller. Since they are not costs that can be avoided, and since these costs are not inherent in the recurring rates charged to customers, including them as avoided costs in the recurring rate discount calculations would be entirely inappropriate.

Since Qwest's existing customer base provides resellers with the vast majority of their potential customers, inappropriately including non-recurring costs in the recurring rate discount calculations, and assuming an inappropriately high avoided cost percentage, would dramatically and erroneously increase the recurring resale discount percentages that will be applied to recurring service rates. Since non-recurring charges have their own rate lists or charges, applying inflated discounts to each regularly billed recurring service, each and every month the service is billed, just does not stand the test of reason or match the rates and inherent cost language and provision of the Act.

In the post-Telecommunications Act environment, non-recurring compensation and procedures established between Qwest and resellers will need to recognize the costs of transferring existing end-users to resellers, the costs created by additional end-user churn, as well as the costs associated with the processing of newly established reseller end-user accounts. Since reseller non-recurring costs and compensation arrangements will be very different from the traditional end-user non-recurring compensation currently incurred and collected from Qwest end-user customers, it would be totally inappropriate to consider the traditional non-recurring costs as avoided costs in the resale discount calculations. Doing so would contaminate resale discounts created for recurring rate retail services, which have separate rates and costs.

Furthermore, non-recurring charges recorded in Account 6623 also include the order processing costs for resale and interconnection. Resale and interconnection functions are a direct result of wholesale operations resulting from requirements of the Act, therefore, such costs are not avoided "retailing" costs or costs that should be used in determining avoided cost discounts for retail telecommunications services.

Therefore, like Operator Service/DA service, the Company's non-recurring customer service operational costs and revenues have been excluded from the Qwest embedded avoided cost study in determining recurring rate resale discounts. In both instances, Qwest operations should not be impacted twice, or on an ongoing basis, for charges (i.e. non-recurring service charges or Operator Service/DA charges), which have their own rates/fees, and for costs that are not included in the retail rates for routine recurring telecommunications services. Rather, these charges must be treated as separate issues, addressed on a stand-alone basis, and excluded from the discount study in calculating recurring rate discounts.[24]

Q. DESCRIBE IN MORE DETAIL ANY OTHER COSTS RECORDED IN THE CUSTOMER OPERATIONS ACCOUNT AND WHY QWEST WILL CONTINUE TO INCUR CERTAIN OF THESE COSTS IN THE DELIVERY OF SERVICES TO RESELLERS.

A. Besides Operator Service/DA and Non-recurring costs, the Customer Operations cost category contains Customer Service costs for Billing and Collection expenses. Billing and Collection costs are another area of Customer Operations where "retailing" type costs may be reduced, but certainly not entirely eliminated. Although Qwest will not be billing reseller end-users, it will be billing each and every reseller for their

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24 Non-recurring business office costs are sunk costs that are not avoided that should be removed from an embedded avoided cost study. However, if they are not removed, separate Qwest analysis would indicate that business office costs (on a per line basis) will not be avoided on a net basis. Any end-user non-recurring costs are offset by incremental reseller costs required for reseller/customer identification, order processing and inquiry. Thus, the avoided cost percentage for any non-recurring costs not excluded from an embedded avoided cost study would be 0%. Exclusion of the costs is the more conservative approach of the two.

wholesale service purchases. These reseller billing costs may be lower than retail end-user billing costs, but they are real costs nonetheless, and they must be considered and included in the determination of avoided costs. Billing and Collection costs currently billed to carriers for Access services clearly demonstrate that B&C costs exist in a non-retail environment. In addition, the billing and collection accounts reflect unique sub-accounts (6623.3 / .4) for the B&C costs billed to Qwest by other exchange carriers (Independent Companies) for designated carrier Independent Company (ICO) Toll. Qwest will not avoid these costs due to resale, and the avoided cost study must recognize this fact and handle these costs as not avoided.

Q. WHAT FINAL CONCLUSION DID QWEST REACH REGARDING ITS "CUSTOMER SERVICE" COSTS?

A. Qwest concluded that the FCC's generic 90% avoided cost factor assumption was totally inappropriate to apply to all Qwest "Customer Service" costs summarized in Account 6620. Cost data specific to Qwest's Arizona operations was required and available to establish the proper percentages to apply to portions of the account balances. Qwest's study employs a separate factor for each resale product evaluated and for each of the three <u>non-excluded</u> components of Total Customer Service (i.e. Call Completion, Number Services, and Customer Services). Call Completion and Number Services functions (Mechanized Operator Intercept and Customer Data Base Maintenance) will be performed by Qwest in a resale environment. These Customer

Operations "Customer Service Costs" must reflect avoided cost percentages of 0% avoided. The portion of Customer Service costs associated with Qwest Billing and Collection expenses is avoided in a range from 82% to 99% for retail services. These percentage factors are applied on a product-category basis in the embedded cost study.[25] Again, I would emphasize that these percentages are only applicable to intrastate retail service amounts, not the entire account balance.

Q. WHAT IS THE SOURCE OF THE UNCOLLECTIBLE REVENUES AVOIDED COST PERCENTAGE USED FOR EACH OF THE PRODUCT CATEGORIES?

A. The Uncollectible Telecommunications End-User Revenues avoided cost percentage used for each of the product categories is based on Qwest's uncollectibles experience with carriers in the wholesale access market.[26] For retail services, the Qwest study employs avoided cost percentages of approximately 88%. However, Uncollectible Telecommunication - Independent Company (ICO) Revenues booked to Account 5301.224, associated with designated carrier ICO toll, must be considered 0% avoided. ICO uncollectible revenue amounts are determined by the various Independent companies based on their toll traffic and constitute costs billed to Qwest that cannot be avoided due to resale.

25 See Proprietary Exhibit DMG - 2, Schedule 3.6.1, Line (7).

Q. HOW DID QWEST DETERMINE THERE WERE NO AVOIDED COSTS ASSOCIATED WITH ANY OF THE OTHER DIRECT COST AMOUNTS IN YOUR EMBEDDED STUDY AS DEPICTED IN PROPRIETARY EXHIBIT DMG - 2, COLUMN (d) OF SCHEDULES 2 THROUGH 2.5?

A. Qwest reviewed each account and cost element and determined that:

(1) Qwest's current level of direct maintenance and network operations costs recorded in Plant Specific and Non-Plant Specific USOA accounts (Accounts 6110 - 6530) will not change regardless of whether the service sold is to an end-user or to a wholesaler, since Qwest is responsible for maintaining the network and providing the same level of quality service to all customers, wholesale or retail;[27]

(2) Access expense (Account 6540) billed to Qwest by Independent Companies, and any local reciprocal compensation access charges reflected in the operating results under review, will not change and are not avoided costs in provisioning wholesale or resale;

(3) Depreciation /Amortization (Account 6560) should be considered, but split

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26 See Proprietary Exhibit DMG - 2, Schedule 3.3, line (15), which shows the avoided factor development.

27 The FCC 96-325 The First Report & Order in the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Section VIII. Resale, para. 919 states that Plant Specific and Non-Plant Specific costs are presumed to be not avoided and Qwest analysis confirms that this is a valid assumption.

between direct and indirect costs to recognize that retail operations include a portion of related indirect investment costs. These indirect costs are considered partially avoided. (See Schedules 3.4 and 3.7 of Proprietary Exhibit DMG - 2); and

(4) Capital Costs (Cost of Money) inherent in retail rates should be properly considered but split between direct and indirect costs in order to recognize that direct network-related capital costs will not change due to resale, and that only the portion of the indirect costs attributable to retailing operations would be avoided. (See Schedule 3.8 of Proprietary Exhibit DMG - 2)

Q. HOW DID QWEST CALCULATE THE PORTION OF COSTS THAT ARE AVOIDED RELATING TO GENERAL SUPPORT AND CORPORATE OPERATIONS EXPENSES IN YOUR EMBEDDED STUDY?

A. The Qwest avoided cost study develops two distinct indirect avoided cost ratios, employing a common formula of *total direct avoided costs* to *total direct costs*. In both ratios, direct costs include the appropriate Part 32 expense accounts in the 6000 series as well as a "direct" capital cost of money component related to network assets. Although the capital component is not recorded in this USOA Part 32 account series, network capital costs must not be ignored in the avoided cost discount calculations. These costs constitute actual operating costs inherent in the retail rates that are subject to discount, and they require general/corporate operating cost support expenditures.

Capital funding for network-related costs, equipment and capitalized expenses requires a variety of indirect general support costs, including treasury and banking, investor relations, legal, accounting, and human resources, just to name a few. Therefore, capital funding costs must share in the assignment of indirect costs and must be used in developing the direct/indirect avoided cost ratio applied to total indirect costs. Failure to do so would materially overstate the amount of avoided indirect costs caused by resale.

Q. WHY ARE TWO INDIRECT AVOIDED COST RATIOS PRODUCED AND USED IN QWEST'S AVOIDED COST STUDY?

A. A basic, overall, *direct avoided cost* to *total avoided cost* factor is created for application to the majority of indirect costs. However, the basic indirect ratio must be adjusted for applications involving accounts that contain computer related costs (e.g. General Support – General Support Computers, Depreciation/Amortization – General Purpose Computers, Information Management Expense, and Capital Costs – General Purpose Computers) in order to properly handle computer related costs that are not avoided due to resale.

In 1999 the Company incurred significant network-related computer costs, Y2K costs, and interconnection-related computer costs that are not avoided due to resale. Network computer costs are required to run the network support systems including the network utilized by resellers. Interconnection computer costs are new wholesale costs stemming from Qwest's need to redesign its computer systems / programs (excluding OSS) to recognize CLEC information and meet other requirements of the Act. Y2K computer related costs encompass a variety of systems charges that relate to the Company's efforts to develop and ensure system integrity for Y2K compliance. The proper recognition and treatment of network support costs, interconnection related costs and Y2K computer costs, which are not avoided in the resale of retail telecommunications services, necessitates the development and use of a second indirect avoided cost ratio. This adjusted indirect ratio is applied only to the computer related portion of general support expense accounts and capital costs.

Q. DESCRIBE THE TYPE OF COSTS TO WHICH THESE RATIOS WERE APPLIED.

A. The *Direct Avoided Cost/Total Direct Cost* ratios are applied to "indirect" support costs typically recorded in the FCC Part 32 6700 series of accounts. This series of accounts includes general and administrative costs, executive, legal, accounting, human resources, etc. However, in addition to these costs, Miscellaneous Rent Compensation Net expense, Property and Other Taxes, Other Operating Expenses, and a general support Capital Cost element were also included and considered to be partially avoided.

Q. PLEASE EXPLAIN WHY QWEST INCLUDED MISCELLANEOUS RENT COMPENSATION EXPENSES, OTHER OPERATING EXPENSES, PROPERTY AND OTHER TAXES, AND GENERAL SUPPORT CAPITAL COSTS IN ITS AVOIDED COST STUDY.

A. All of these costs are elements inherent in Qwest's Arizona retail rate structure. Therefore, under the parameters of the Act, they must be included in an avoided cost study. They constitute indirect costs; therefore, it is appropriate to apportion them using the *direct avoided cost/total direct cost* ratio I mentioned previously.

- Miscellaneous Rent Compensation Net includes Accounts 5240 through Account 5263. InterArea Rent Compensation (Accounts 5240.7/.8) is the net of: 1) "rental" amounts that other Qwest states pay to Qwest's Arizona operations for use by those states of assets that are part of the Arizona booked operations; and 2) amounts that Qwest's Arizona operations pays to other states for the use of corporate facilities located in each of Qwest's other states. The Net InterArea Rent Compensation (Rent Revenue/Expense) consists of reimbursement/payment for multi-state joint use support investment depreciation, property taxes, house services expense, rents and support investment capital costs. All of these cross-charged costs increase or reduce costs classified as indirect costs in the avoided cost study. Other Miscellaneous Rent Compensation accounts include amounts derived from the rental, or sub-rental, of telecommunications plant furnished apart from telecommunications operations (e.g. land and building space, outside plant or central office space, space provided in conduits, pole line space for attachments, etc.) This incidental compensation is utilized (that is netted, or offset, against total expenses) in order to recognize that associated costs have separate recovery mechanisms.

- Other Operating Expense (Account 7100) costs reflect certain costs related to employee benefits that are not recorded in the 6000 series of accounts per FCC Part 32 Accounting rules and directives. Although recorded in Account 7100, they are operating costs that are inherent in the rates subject to resale and should be included.
- Indirect General Support Capital Costs are the cost of money/capital return costs that are associated with buildings, furniture, office equipment, computers, and other general support assets.
- Property and Other Taxes are non-income tax amounts for property, gross receipts, and franchise and capital stock taxes. These are operating expenses inherent in resale service rates.

Description Of Embedded Avoided Cost Study Documentation

Q. ARE THE QWEST EMBEDDED AVOIDED COST STUDY AND DISCOUNT RESULTS PROVIDED AS EXHIBITS TO YOUR TESTIMONY?

A. Yes. As I mentioned earlier, Exhibit DMG - 1 provides a narrative description of the Qwest Embedded Avoided Cost Study. Proprietary Exhibit DMG - 2, Schedules 2 Composite and 2.1 through 2.5 depict the packaged / special service composite and the five basic service product category avoided costs and discount calculations. Proprietary Exhibit DMG - 2, Schedules 3.1through 3.8 provide further supporting calculations for Schedules 2 through 2.5.

Q. PLEASE EXPLAIN MORE FULLY THE EMBEDDED STUDY DOCUMENTATION AND THE SCHEDULES THAT ARE ATTACHED TO YOUR TESTIMONY.

A. As previously stated, the data employed in the Qwest Embedded Avoided Cost Study is taken from the Company's 1999 journalized results from operations. The initial data corresponds to the data reflected in the Company's FCC ARMIS 43-03 and 43-04 Reports. The Arizona CAAS/CARS data originate with this ARMIS data. However, the CARS reports, which depict intrastate product-specific operations, also incorporate state-specific treatment of costs, such as depreciation and employee-related benefit amortization costs. In this study, 1999 ARMIS and intrastate data, as adjusted for differences in state accounting treatment, were used as the starting point. These amounts are shown in Proprietary Exhibit DMG - 2, Schedule 2 – Composite, Column (b) and also in Column (a) of Schedule 3.1.

Q. PLEASE EXPLAIN PROPRIETARY EXHIBIT DMG - 2, SCHEDULES 2 THROUGH 2.5.

A. Proprietary Exhibit DMG - 2, Schedules 2 through 2.5, contain the results of the embedded cost study. These Exhibits show the various "Avoided Cost ***to*** Total Cost" percentage calculations applicable to each Product Category and the aggregate overall Composite Avoided Cost Percentage (ACP), as follows:

2	Packaged Service/Special Service Composite	10.46%
2.1	Business (Category 1)	9.41%
2.2	Toll (Category 2)	23.96%
2.3	Listings, CO Features, & Informational Services (Category 3	41.51%
2.4	Residence (Category 4)	4.19%
2.5	Private Line (Category 5)	6.44%

Q. PLEASE EXPLAIN THE SUPPORTIVE SCHEDULES CONTAINED IN PROPRIETARY EXHIBIT DMG - 2.

A. Proprietary Exhibit DMG - 2 also contains schedules that provide the additional detail necessary to calculate the avoided cost percentages shown above, as follows:

Schedule 3.1: Provides the individual financial statement detail for each of the excluded (non-resale) products. Under the general guidelines of the Federal Act, these services are subtracted from the "Total Intrastate" results to arrive at the

"Retail Intrastate" results, which are used in the avoided cost discount percentage calculations.

Schedule 3.2: Provides a "Retail" services revenue summary that excludes non-recurring revenues.

Schedule 3.3: Provides detail of the calculations of embedded avoided uncollectible revenue expense by product.

Schedule 3.4: Provides data relating to computer related costs recorded in Accounts 6124, 6724 and 6560 that are not avoided due to resale.

Schedule 3.4.1: Provides detailed information regarding the Operational Support Systems costs recorded in Account 6724 that are not avoided due to resale since they constitute costs incurred in the provision of resale. Furthermore, these costs are set aside in this study, because separate recovery mechanisms are being sought.

Schedule 3.5: Provides detailed information regarding Testing and Power costs.

Schedule 3.6 and 3.6.1: Provides detail of the avoided Customer Operations expense components by product.

Schedule 3.7: Provides the calculation of Depreciation Expense split between direct and indirect costs.

Schedule 3.8: Provides the calculation of Capital Costs on a product-specific, total retail service, split between direct and indirect, cost basis (including return and tax gross-up).

Q. WHY WERE CERTAIN QWEST REVENUES AND COSTS, SHOWN ON PROPRIETARY EXHIBIT DMG - 2, SCHEDULE 3.1, EXCLUDED FROM YOUR STUDY?

A. As I stated previously, these are services that are not subject to resale, as established either by the Act's definition (Intrastate Access, Third Party Billing and Collection, Wireless Interconnect Access (RCC and Cellular), and Mobile) or by virtue of the type of service offered (E911, wholesale PAL, Operator Services/DA, and Miscellaneous Other). Non-recurring business office costs and revenues for the resale services are also excluded in order to avoid contaminating the recurring discount calculations. These costs and revenues must be excluded, since the non-recurring costs associated with service order processing and other business office non-recurring costs, which will be incurred by Qwest on a resale basis, have their own unique characteristics and rates and are costs that are not avoided for existing customers, as described previously.[28]

Q. HOW WERE THE EMBEDDED RESALE DISCOUNTS CALCULATED?

A. The Qwest embedded resale discounts were calculated for the five basic service product categories, and the packaged / special service - composite, as a percent of "<u>Total Avoided Cost" *to* "Total Operating Costs</u>", where avoided costs and total operating costs include both *"Expenses"* and *"Capital Cost"* components. Inclusion of Capital Costs in developing both the numerator and denominator of the discount formula is key to properly calculating resale discounts. Capital costs must be properly analyzed and included in determining avoided costs, since they are costs which are very much a part of the total operating costs comprising the retail rates being discounted.

Q. WHAT ANALYSIS AND/OR DOCUMENTATION HAS QWEST PROVIDED AS PART OF ITS EMBEDDED AVOIDED COST STUDY REGARDING VOLUME / TERM CONTRACT SERVICES?

A. Exhibit DMG - 1 - Narrative Description includes an Addendum which specifically focuses on Qwest's already-discounted contract / term services. The exhibit

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28 Qwest's policy witness in this proceeding identifies the Qwest retail telecommunications services

Addendum reflects the results of several sensitivity analyses performed on the Qwest embedded avoided cost study that address "retailing" avoided cost differences associated with already-discounted services. The sensitivity analyses identify several avoided cost issues, demonstrating why application of full-price retail service discounts to already-discounted services would be inappropriate under the "rate" and "costs inherent in the rate" resale provisions of the Act.

Q. WHAT ANALYSIS AND/OR DOCUMENTATION HAS QWEST PROVIDED AS PART OF ITS EMBEDDED AVOIDED COST STUDY REGARDING OPERATOR SERVICE/DA SERVICES?

A. Proprietary Exhibit DMG - 6 develops an avoided cost resale discount for Operator Services/DA that could be used in lieu of Qwest's already existent Operator Service/DA wholesale tariff rate.

V. CONCLUSIONS AND FINAL RECOMMENDATIONS

Q. WHAT FINAL CONCLUSIONS AND RECOMMENDATIONS ARE YOU OFFERING IN CONNECTION WITH QWEST'S AVOIDED COST STUDY?

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that are subject to resale discounts under the terms of the Federal Act.

A. **First,** five product-category basic service resale discounts, rather than a single, composite discount, should be adopted in this proceeding. Creation and application of only a single aggregate discount is inappropriate given the fact that the cost characteristics of all services are not the same and that reseller purchases will not correspond to the retail mix presently sold by Qwest. Obviously, some services are capital intensive (such as Basic Residence Service), while other services are more labor intensive; and some services require more retailing sales and/or product management support in relation to total product costs than do other services. Therefore, the Commission should adopt the five basic service product categories reflected in the Qwest avoided cost study since they provide the differentiation required for proper product segmentation. The use of basic service product category discounts also averts the improper reseller arbitrage that becomes available with a single discount when resellers pick and choose which services to resell.

Qwest recommends that the Commission adopt Qwest's Embedded Avoided Cost and Resale Discount Study and the product category discounts listed below:

Category	**Service Description**	**Discount**
1	Basic Exchange Business	9.41%
2	Toll	23.96%
3	Listings, CO Features, & Informational Services	41.51%
4	Basic Exchange Residence	4.19%
5	Private Line	6.44%

Second, Qwest proposes that the Commission adopt the use of a composite discount of 10.46% for Packaged / Special Services such as CustomChoice™, ISDN, PBX, Centrex, and Advance Communications Services (ACS), such as Frame Relay.

Third, the Commission should find that if Operator Service/DA services are obtained from Qwest, the existing wholesale tariff should be employed or a separate resale discount of 7.00% should be applied to Operator Service/DA retail rates.

Fourth, the Commission should uphold the sanctity of Qwest's existing customer contracts. However, if the Commission determines that Qwest initiated and existing contracts are to be subjected to the Act's resale discount provisions, then the Commission should recognize that full-retail discounting, of an already discounted service, would facilitate unwarranted double discounting. To avoid double discounting, the Commission should further resolve to employ a separate avoided cost analysis in the establishment of any resale discounts.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.

D. M. (MARTI) GUDE - HAS TESTIFIED ON THE SUBJECT OF EMBEDDED COST STUDIES IN THE FOLLOWING:

STATE	CASE/ DOCKET NO.	CASE NAME	DATE OF TESTIMONY	DATE OF CROSS
Iowa	RPU-88-9	Rate Design Case	D - 7-29-88 * R - 12-13-88 *	1-11-89
Iowa	RPU-88-6	Iowa General Rate Case Rehearing	R - 6-8-89	6-22-89
Iowa	RPU-91-4	In the Matter of the Petition of the Consumer Advocate Division of the Department of Justice Requesting Reduced Rates for U S WEST Communications, Inc.	D - 9-25-91	Settlement reached prior to Hearing
Iowa	TCU-93-3	In Re: McLeod Telecommunications, Inc. (Resale of Centrex Plus)	D - 8-25-93	9-13-93
Iowa	RPU-93-9	In Re: U S WEST Communications, Inc. (Iowa Earnings Investigation)	D - 11-30-93 SR - 2-21-94	3-23-94
Iowa	RPU-95-11	In Re: U S WEST Communications, Inc. (Rate Rebalancing)	D - 9-22-95 R - 2-20-96	Testimony Withdrawn and Proceeding Terminated
Minnesota	P-421/CI-86-354	NWB Earnings Investigation	R - 9-28-87 *	12-87
Nebraska	C-1874	In the Matter of the Application of U S WEST Communications, Inc. for Authority to Increase its Residential Basic Local Exchange Rates Pursuant to Neb. Rev. Stat. Section 86-803(9).	D - 11-25-98 R (oral) - 12-17-98	12-17-98
North Dakota	10,823	IMTS Deregulation	D - 1-13-88 *	1-20-88
North Dakota	PU-314-99-119	U S WEST Communications, Inc. SB 2420 Residential Price Changes Investigation	D - 5-30-2000	6-7-2000

D. M. (MARTI) GUDE - HAS TESTIFIED ON THE SUBJECT OF EMBEDDED COST STUDIES IN THE FOLLOWING:

STATE	CASE/ DOCKET NO.	CASE NAME	DATE OF TESTIMONY	DATE OF CROSS
Oregon	UX 22	In The Matter of the Petition of U S WEST Communications, Inc., To Exempt From Regulation U S WEST's IntraLATA Toll Service	D - 8-9-99	Petition Withdrawn by USWC
South Dakota	F-3848, 3849, 3850	In the Matter of the Inquiry into Northwestern Bell Telephone Company's Allocation of Revenues, Investment, and Expenses Among All Services Offered	D - 9-1-90 SR - 11-15-90	12-4-90
South Dakota	TC99-098	In the Matter of the Petition of U S WEST Communications, Inc. to Reclassify U S WEST's Directory Assistance Service	D - 9-20-99	Settlement reached prior to Hearing

* Filed as D. M. Conley

D = Direct
R = Rebuttal
SR = Surrebuttal
Sup = Supplemental

(d) **Training Labor:** Training Labor recovers the cost of training Qwest employees on the installation and maintenance of non-standard equipment provided by a CLEC under a virtual collocation arrangement. This charge does not apply if a CLEC selects equipment already in use by Qwest in the same metropolitan area. The training element covers the cost of training three Qwest employees, and includes the actual cost of the training course, and the employees' time. In the event a second CLEC selects the same equipment, the second CLEC is assessed a training fee equal to one-half the fee charged to the first CLEC. The first CLEC is refunded one-half the training fee.

(e) **Space Lease):** The exception of leased space with virtual collocation occurs only in the instance where a CLEC provides its own equipment bay.

Q. ARE THERE UNIQUE CHARGES FOR ICDF COLLOCATION?

A. The charges for ICDF Collocation are the non-recurring and recurring charges associated with the unbundled network elements ordered by the CLEC and the cost of extending the unbundled network elements to the demarcation point, which are recovered through the ITP charges addressed in the Qwest testimony of Mr. Hooks. Additionally, the security charge is applicable.

Q. DOES QWEST ALLOW FOR INTERCONNECTION OF CLEC-TO-CLEC FACILITIES IN THE SAME CENTRAL OFFICE FOR CLECS TO MUTUALLY EXCHANGE OF TRAFFIC?

A. Yes. A CLEC is able to request interconnection with another CLEC in the same Qwest central office.

Q. WHAT TYPE OF PRODUCTS DOES QWEST OFFER FOR CLEC-TO-CLEC CONNECTIONS?

A. Qwest offers two product types for CLEC-to-CLEC Connections: Direct and Cross Connection. These products are for the interconnection of collocation sites only.

Q. PLEASE BRIEFLY EXPLAIN DIRECT CLEC-TO-CLEC CONNECTIONS.

A. With Direct CLEC-to-CLEC a cable is placed between the collocations of CLEC A and CLEC B. The connections may be physical to physical, physical to virtual, or virtual to virtual collocations.

Q. PLEASE BRIEFLY EXPLAIN CLEC-TO-CLEC CROSS CONNECTION.

A. This method of CLEC-to-CLEC connection is accomplished by providing a cross connection between the two CLEC's Connecting Facility Assignment (CFA) terminations on the same Interconnection Distribution Frame (ICDF). Interconnection tie pairs are used at the same ICDF to connect the two CLEC's.

VI. CONCLUSION

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. My testimony provides an overview of collocation that describes the many types of collocation including virtual; physical caged, cageless and shared; adjacent and ICDF. I then present the rate elements that are used in pricing a standard collocation installation. In Exhibit 1, I present the actual rates that Qwest recommends this Commission approve for use in developing the pricing for a standard collocation.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

BEFORE THE ARIZONA CORPORATION COMMISSION

CARL J. KUNASEK
CHAIRMAN
JIM IRVIN
COMMISSIONER
WILLIAM A. MUNDELL
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS AND UNBUNDLED NETWORK ELEMENTS AND RESLAE DISCOUNTS	)))))))	**DOCKET NO. T-00000A-00-0194**

EXHIBIT OF

Robert F. Kennedy

QWEST CORPORATION

October 11, 2000

	RECURRING	NON-RECURRING
STANDARD COLLOCATION		
COLLOCATION TERMINATIONS		
DS0Terminations 90 Day Installation		
DSO CABLE PLACEMENT PER 100 PAIR BLOCK	$0.60	$303.59
DSO CABLE PLACEMENT PER TERMINATION	$0.01	$5.70
DSO CABLE PER 100 PAIR BLOCK	$0.63	$323.19
DSO CABLE PER TERMINATION	$0.01	$4.43
DSO BLOCKS PER 1OO PAIR BLOCK	$1.11	$563.51
DSO BLOCKS PER TERMINATION	$0.02	$7.72
DSO BLOCK PLACEMENT PER 1OO PAIR BLOCK	$0.61	$309.42
DSO BLOCK PLACEMENT PER TERMINATION	$0.01	$4.24
DS1 TERMINATIONS 90 Day Installation		
DS1 CABLE PLACEMENT PER 28 DS1s	$0.55	$449.28
DS1 CABLE PLACEMENT PER TERMINATION	$0.06	$48.31
DS1 CABLE PER 28 DS1s	$0.46	$373.11
DS1 CABLE PER TERMINATION	$0.05	$40.12
DS1 PANEL PER 28 DS1s	$0.53	$425.74
DS1 PANEL PER TERMINATION	$0.06	$51.40
DS1 PANEL PLACEMENT PER 28 DS1s	$0.13	$106.47
DS1 PANEL PLACEMENT PER TERMINATION	$0.01	$11.45
DS3 TERMINATIONS 90 Day Installation		
DS3 CABLE PLACEMENT PER TERMINATION	$0.27	$215.13
DS3 CABLE PER TERMINATION	$0.30	$240.94
DS3 CONNECTOR PER TERMINATION	$0.31	$248.25
DS3 CONNECTOR PLACEMENT PER TERMINATION	$0.04	$34.31

ENTRANCE FACILITY		
Standard Shared per fiber	$15.41	$1,272.89
Cross Connect per fiber	$15.50	$1.383.30
Express per cable	$243.19	$9,068.09
CABLE SPLICING 90 Day Installation		
Setup		$490.15
Per fiber spliced		$39.18
INSPECTOR LABOR Per half hour		
Regular business hours		$32.93
Outside regular business hours		$42.40
- 48 V DC POWER USAGE Power Plant per AMP ordered	$11.30	
Power Usage less than 60 AMPS per amp ordered	$3.81	
Power Usage more than 60 AMPS per AMP ordered	$7.61	
BACKUP AC POWER FEED USAGE		
120 V per AMP	$19.60	
208 V, Single Phase per amp	$33.97	
208 V, Three Phase per amp	$58.76	
240 V, Single Phase per amp	$39.19	
240 V, Three Phase per amp	$67.80	
480 V, Three Phase per amp	$135.60	
BACKUP AC POWER CABLE 90 Day Installation	Per foot	Initial charge, per foot
20 AMP Single Phase	$0.01	$8.24
20 AMP Three Phase	$0.01	$10.22
30 AMP Single Phase	$0.01	$8.89
30 AMP Three Phase	$0.02	$12.20
40 AMP Single Phase	$0.01	$10.45
40 AMP Three Phase	$0.02	$14.38
50 AMP Single Phase	$0.02	$12.39
50 AMP Three Phase	$0.02	$17.31
60 AMP Single Phase	$0.02	$14.02
60 AMP Three Phase	$0.02	$19.92
100 AMP Single Phase	$0.02	$17.35
100 AMP Three Phase	$0.03	$27.10
SECURITY		
Access card per employee	$0.90	
Card access per person, per month	$8.38	

CENTRAL OFFICE CLOCK SYNCHRONIZATION	$7.66	
SPACE CONSTRUCTION GENERAL		
CAGELESS COLLOCATION Space construction & site preparation 90 Day installation		
Space construction for 2 Bays and 1 – 40 A Power Feed	$38.63	$31,279.17
Space construction Adjustment for initial power feed		
20 A	-$2.78	- $2.248.29
30 A	-$1.77	- $1,434.84
60 A	$2.43	$1,969.73
Space construction Adjustment each additional bay	$4.03	$3,266.88
Space construction Adjustment for additional power feed		
20A	$7.05	$5,707.86
30A	$8.05	$6,521.30
40A	$9.83	$7,956.15
60A	$12.26	$9.925.88
RENT		
Per square foot	$4.09	
CAGELESS CONSTRCTION QUOTE PREPARATION FEE/QPF		$4,522.82
CAGED COLLOCATION Monthly Space & Space Construction 90 Day Installation		
Cage up to 100 sq. ft	$66.56	$53,896.93
Cage 101 to 200 sq. ft	$69.05	$55,908.82
Cage 201 to 300 sq. ft	$70.98	$57,473.30
Cage 301 to 400 sq. ft	$73.40	$59,433.89
Space construction Adjustment initial power feed		
space construction adjustment 20A initial power feed	- $10.77	- $8,718.50
space construction adjustment 30A initial power feed	- $9.80	- $7,937.45
space construction adjustment	- $7.79	- $6,304.54

40A initial power feed		
space construction adjustment 100A initial power feed	$11.92	$9,651.53
space construction adjustment 200A initial power feed	$38.05	$30,812.37
space construction adjustment 300A initial power feed	$69.82	$56,533.18
space construction adjustment 400A initial power feed	$107.39	$86,952.38
Space construction Adjustment additional power feed		
space construction adjustment each 20A additional power feed	$8.89	$7,200.15
space construction adjustment each 30A additional power feed	$9.86	$7,981.20
space construction adjustment each 40A additional power feed	$11.87	$9,614.12
space construction adjustment each 60A additional power feed	$19.66	$15,918.65
space construction adjustment each 100A additional power feed	$31.58	$25,570.18
space construction adjustment each 200A additional power feed	$57.71	$46,731.02
space construction adjustment each 300A additional power feed	$89.48	$72,451.83
space construction adjustment each 400A additional power feed	$127.05	$102,871.03
GROUNDING (UNIQUE TO CAGED COLLOCATION)		
#2 AWG PER FOOT	$0.02	$13.00
1/0 AWG PER FOOT	$0.03	$21.64
4/0 AWG PER FOOT	$0.03	$24.58
350 KCMIL PER FOOT	$0.04	$34.11
500 KCMIL PER FOOT	$0.05	$38.01
750 KCMIL PER FOOT	$0.07	$58.23
RENT		
Per square foot	$4.09	
QUOTE PREPARATION FEE/QPF CAGED COLLOCATION		$4,917.62
VIRTUAL COLLOCATION		
EQUIPMENT BAY/ PER SHELF		
Per shelf	$3.73	

MAINTENANCE LABOR (PER HALF HOUR)		
REGULAR BUSINESS HOURS		$28.88
OUTSIDE BUSINESS HOURS		$38.65
ENGINEERING LABOR (PER HALF HOUR)		
REGULAR BUSINESS HOURS		$31.16
OUTSIDE BUSINESS HOURS		$40.23
TRAINING LABOR (PER HALF HOUR)		
REGULAR BUSINESS HOURS		$28.88
INSTALLATION LABOR (PER HALF HOUR)		
REGULAR BUSINESS HOURS		$32.93
OUTSIDE BUSINESS HOURS		$42.40
QUOTE PREPARATION FEE/QPF VIRTUAL COLLOCATION		$4,522.82
CLEC-TO-CLEC CONNECTIONS		
CLEC-TO-CLEC QUOTE PREPARATION FEE/QPF		$1,052.79
FLAT CHARGE (DESIGN, ENGINEERING, & INSTALLATION- NO CABLES)		$3,770.95
CABLE RACKING	PER FOOT	
DS0	$0.14	
DS1	$0.15	
DS3	$0.12	
VIRTUAL CONNECTIONS (IF APPLICABLE- CONNECTIONS ONLY; NO CABLES)		
DS0, PER 100 CONNECTIONS		$272.99
DS1, PER 28 CONNECTIONS		$121.34
DS3, PER 1 CONNECTION		$12.72
Cable Hole (if applicable)		$439.82
Note; CLEC/DLEC must supply and place cables. No cable material or placement costs are included.		

BEFORE THE ARIZONA CORPORATION COMMISSION

IN THE MATTER OF INVESTIGATION)
INTO QWEST CORPORATION'S)
COMPLIANCE WITH CERTAIN) DOCKET NO. T-00000A-00-0194
WHOLESALE PRICING REQUIREMENTS)
FOR UNBUNDLED NETWORK) AFFIDAVIT OF
ELEMENTS AND RESALE DISCOUNTS) Robert F. Kennedy
)

STATE OF NEBRASKA)
)
COUNTY OF DOUGLAS)

Robert F. Kennedy, of lawful age being first duly sworn, depose and states:

1. My name is Robert F. Kennedy. I am Manager – Interconnection of Qwest Corporation in Omaha, Nebraska. I have caused to be filed written testimony and exhibits in support of USWC in Docket No. T-00000A-00-0194.

2. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge and belief.

Further affiant sayeth not.

Robert F Kennedy
Robert F Kennedy

SUBSCRIBED AND SWORN to before me this 10th day of October, 2000.

Mark C Holling
Notary Public residing at
Omaha, Nebraska.

My Commission Expires: August 15, 2003

GENERAL NOTARY-State of Nebraska
MARK C. HOLLING
My Comm. Exp. Aug. 15, 2003

BEFORE THE ARIZONA CORPORATION COMMISSION

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)))))))	DOCKET NO. T-00000A-00-0194

DIRECT TESTIMONY OF

PERRY W. HOOKS, JR.

QWEST CORPORATION

October 11, 2000

TESTIMONY INDEX

I. EXECUTIVE SUMMARY

This Direct Testimony proposes recurring and nonrecurring charges and describes the following UNE products and related services: certain wholesale loop products which include unbundled DS1 and DS3 Digital Capable Local Loops; the unbundled DS1 Feeder Sub-Loop and Line Sharing; Shared Transport; Unbundled Dark Fiber (UDF); and UNE Platform: Plain Old Telephone Service (UNE-P POTS). Qwest recommends that this Commission approve Qwest's proposed recurring and nonrecurring charges for the products included in this cost proceeding.

II. IDENTIFICATION OF WITNESS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION WITH QWEST CORPORATION.

A. My name is Perry W. Hooks, Jr. I am employed by Qwest Corporation ("Qwest"). My business address is 1801 California Street, Suite 2150, Denver, CO, 80202. Effective October 1, 2000, I accepted the position of Director of Wholesale Switching and Trunking Services for Qwest.

Q. PLEASE BRIEFLY REVIEW YOUR TELECOMMUNICATIONS INDUSTRY WORK EXPERIENCE.

A. I began working for U S WEST in 1984 in various legal and management positions. I worked as an attorney in the U S WEST Law Department, for the first ten years of my career, including seven years as the Chief Counsel to the Technical Operations and Network organizations of the company. Since 1995, I have served in various positions within the Strategy Development, Markets-Regulatory Strategy, Network, Carrier and the Wholesale Markets organizations. While in the Strategy Development organization, my responsibilities included oversight and conduct of competitive analysis. While in the Marketing – Regulatory Strategy organization, my responsibilities included supervision of company and external expert witnesses who testified concerning U S WEST's retail products and services, competition, and product costs. While in the Network organization, I served as Director of Program Management for Interconnection Operations and was responsible for the coordination of wholesale local services program and project management for installation and repair processes of resold finished services, interconnection services, and unbundled network elements. In 1997, I assumed the position of Director – Legal and Regulatory Affairs, Wholesale Interconnection Operations.

Q. PLEASE GENERALLY DESCRIBE YOUR RESPONSIBILITIES AS DIRECTOR - LEGAL AND REGULATORY AFFAIRS, WHOLESALE INTERCONNECTION OPERATIONS.

A. As Director - Legal and Regulatory Affairs, Wholesale Interconnection Operations, I developed the advocacy for service performance-related matters, wholesale processes and wholesale products. I testified on behalf of the former U S WEST, now Qwest, concerning wholesale products and services before federal and state regulatory bodies in arbitration cases, rulemakings and complaint proceedings, and in courts concerning conformance with state and federal telecommunications laws and regulations. I held that position from

January 1997 to October 1, 2000, at which time I accepted the position of Director of Wholesale Switching and Trunking Services for Qwest.

Q. PLEASE BRIEFLY REVIEW YOUR FORMAL HIGHER EDUCATION BACKROUND.

A. I hold a Juris Doctorate degree from the University of Michigan Law School in Ann Arbor, Michigan, and two bachelors degrees (Three Majors: Economics; Management; and Political Science) from Washburn University in Topeka, Kansas.

III. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. This Direct Testimony describes certain of Qwest's UNEs and related products and services. Qwest seeks to establish recurring and nonrecurring charges for these UNEs and related products and services. UNE costs and the costs of the related products and services are described in the testimony of Qwest witness Theresa K. Million filed in this proceeding. Specifically, I describe the products and services listed below:

- Unbundled DS1 and DS3 local loops
- Unbundled DS1 feeder sub-loops
- Line Sharing
- Shared Transport
- Unbundled Dark Fiber (UDF)
- Customer Transfer Charge (CTC)

- Channel Regeneration
- Interconnection Tie Pairs (ITP)
- UNE Platform: Plain Old Telephone Service (UNE-P POTS)

IV. DESCRIPTION OF UNBUNDLED NETWORK ELEMENTS (UNE) AND RELATED PRODUCTS AND SERVICES

A. WHOLESALE LOOP PRODUCTS

1. Unbundled DS1 and DS3 Digital Capable Local Loops

Q. PLEASE DESCRIBE QWEST'S UNBUNDLED DS1 AND DS3 DIGITAL CAPABLE LOCAL LOOP PRODUCTS.

A. Qwest's DS1 and DS3 Digital Capable Local Loops establish transmission paths between a central office main distribution frame (or equivalent) up to, and including, Qwest's Network Interface Device (NID) and/or demarcation point. DS1 and DS3 loops are capable of carrying specifically formatted and line coded digital signals. Unbundled digital loops may be provided using a variety of transmission technologies including but not limited to metallic wire, metallic wire based digital loop carrier, and fiber optic fed digital carrier systems. The recurring charges for DS1 and DS3 capable loops are included in Exhibit PWHJR-1 of this testimony.

Q. WHICH NONRECURRING INSTALLATION CHARGES ARE ASSOCIATED WITH UNBUNDLED LOOPS?

A. The following nonrecurring installation charges are associated with the first and each additional DS1 and DS3 loop: Basic Installation; Basic Installation with Performance Testing; Coordinated Installation With Cooperative Testing; and Coordinated Installation Without Testing.

Q. PLEASE DESCRIBE BASIC INSTALLATION.

A. Basic Installation may be ordered for existing DS1 and DS3 service. With the Basic Installation, Qwest disconnects the loop from its current termination and delivers it via Interconnection Tie Pairs (ITP) to the point of demarcation. A Basic Installation charge applies to each loop installed. The applicable nonrecurring charges are included in Exhibit 1 of this testimony.

Q. PLEASE DESCRIBE BASIC INSTALLATION WITH PERFORMANCE TESTING.

A. Basic Installation with Performance Testing is the minimum level of installation required for new DS1 and DS3 service. Qwest will complete the circuit wiring and perform the required performance tests as described in Qwest's Technical Publication 77384 to ensure that the new circuit meets the required parameter limits. A Basic Installation with Performance Testing charge applies to each loop installed. The applicable nonrecurring charges are contained in Exhibit 1 of this testimony.

Q. PLEASE DESCRIBE COORDINATED INSTALLATION WITH COOPERATIVE TESTING.

A. Coordinated Installation with Cooperative Testing may be ordered for new or existing DS1 and DS3 service. When an existing Qwest end-user or a CLEC end-user changes to another CLEC that orders this service, the coordinated installation will include cooperative testing and a technician dispatch. At the appointed time, Qwest will disconnect the loop from its current termination and deliver it to the point of demarcation in coordination with the CLEC. Qwest will complete the required performance tests and perform other testing as requested by the CLEC. A Coordinated Installation with Cooperative Testing - Dispatch charge applies to each loop installed. The applicable nonrecurring charges for this option are contained in Exhibit PWHJR-1 of this testimony.

Q. PLEASE DESCRIBE COORDINATED INSTALLATION WITHOUT TESTING.

A. When an existing Qwest end-user or a CLEC end-user changes to another CLEC using this option, Qwest will disconnect the loop and deliver it to the requesting CLEC via an ITP to the demarcation point. This option offers the CLEC the ability to coordinate the conversion activity, thus allowing the CLEC's end-user the ability to minimize any service interruption. No testing is performed. At the appointed time, Qwest will disconnect the loop from its current termination and deliver it via an ITP to the point of demarcation. Coordinated Installation Without Testing charges apply to each loop installed. Nonrecurring charges for this option are contained in Exhibit PWHJR- 1 of this testimony.

2. Unbundled DS1 Feeder Sub-Loop

Q. WHAT IS A SUB-LOOP?

A. A Sub-loop was defined by the FCC as any portion of the loop that it is technically feasible to access in Qwest terminals located throughout the outside plant, i.e. an accessible terminal, pole, pedestal, Feeder Distribution Interface (FDI), or Minimum Point Of Entry

(MPOE) including inside wire (owned by Qwest). An accessible terminal is any point on the loop where technicians can access the wire or fiber within the cable without removing a splice case and/or digging up or trenching underground to reach the wire within.

Q. PLEASE IDENTIFY AND DESCRIBE THE SUB-LOOP PRODUCT THAT QWEST SEEKS TO INTRODUCE IN THIS COST PROCEEDING.

A. Qwest seeks to introduce the DS1 Capable Unbundled Feeder Sub-Loop. The DS1 Capable Unbundled Feeder Loop is a digital transmission path that is provisioned from a Qwest Central Office Network Interface, (which consists of a DSX-1 panel or equivalent), to the Field Connection Point. The DS1 Capable Unbundled Feeder Loop transports bi-directional DS1 signals with a transmission rate of 1.544 Mbps.

Q. DOES QWEST SEEK TO APPLY RECURRING AND NONRECURRING CHARGES TO ITS DS1 FEEDER SUB-LOOP OFFERINGS?

A. Yes. Exhibit PWHJR-1 identifies the recurring and nonrecurring charges Qwest seeks for the DS1 capable unbundled feeder Sub-Loop.

3. Line Sharing

Q. WHAT IS "LINE SHARING"?

A. Line Sharing provides a CLEC with the ability to offer an end user customer data services simultaneously over the same copper loop that is used by Qwest to furnish the end user with analog voice-grade service. Line Sharing is accomplished when the CLEC accesses the unused high frequency portion of the analog voice-grade service to provide its data services.

Q. IS THE RATE FOR THE USE OF THE LOOP PROPOSED BY QWEST BASED UPON TELRIC?

A. No. Although Line Sharing is provided over an unbundled loop, the pricing that Qwest proposes is not based upon TELRIC.

Q. WHY DOESN'T QWEST USE TELRIC-BASED PRICING FOR THE USE OF THE LOOP IN LINE SHARING?

A. Qwest does not use TELRIC-based pricing for Line Sharing because the loop is not a direct cost of Line Sharing.

Q. WHAT FACTORS DID QWEST CONSIDER IN ESTABLISHING ITS PROPOSED LINE SHARING RATE?

A. Qwest primarily considered two factors in determining its Line Sharing rate: first, the Act's guidance concerning "competitive neutrality"; and second, Qwest's desire to maintain price structure symmetry for the products sharing the loop.

Q. WHAT GUIDANCE DOES THE TELECOMMUNICATIONS ACT GIVE CONCERNING THE PRICING OF LINE SHARING?

A. The Telecommunications Act contemplates that "competitive neutrality" should be a guiding principle for state commissions in their oversight of telephone companies; see e.g. § 253(b). Additionally, competitive neutrality is a desirable trait in a competitive market. By seeking to apply the principle of "competitive neutrality" to Line Sharing pricing, Qwest proposes to charge for the data application. As a result, CLECs do not loose the incentive to build their networks and further facilities-based local exchange competition.

Likewise, providers of telecommunications services that use alternative technologies, such as wireless broadband providers and cable telephony providers, are not faced with competing wireline broadband providers whose costs have been artificially lowered.

Q. HOW DOES QWEST APPLY THE PRACTICE OF PRICE STRUCTURE SYMMETRY TO ITS PROPOSED "LINE SHARING" PRICE?

A. Qwest's proposed Line Sharing rate results in price structure symmetry because both the voice and data services sharing the loop pay a portion of the loop costs. In the absence of price structure symmetry, all of the shared loop costs would have been recovered from either the voice or data service. Charging a price for the high frequency portion of the loop allows a contribution toward the recovery of the cost of the loop. Additionally, the first service to enter the market is not economically penalized. By way of analogy, the Line Sharing price concept is similar to the situation in which two or more parties share the expense of a single railway car used to transport the parties' individual shipments. The common price of the railway car is shared between the parties that use it, just as the UNE loop rate is shared between the voice and data services that share the loop with Qwest's proposal for the loop charge.

Q. HOW DOES A CLEC GAIN ACCESS TO THE END USER CUSTOMER'S ANALOG LOOP IN ORDER TO MAKE USE OF LINE SHARING?

A. Simply described, a CLEC gains access to the analog loop through the use of a "splitter" which separates the voice and data traffic carried over the shared line. The cost of the splitter is paid for by the CLEC, either through direct purchase by the CLEC, or through reimbursement to Qwest. The bay that houses the splitter can be supplied by the CLEC in its collocation space, or by Qwest either in a common area, or mounted on a distribution frame. A discussion of the costs associated with the splitter installation options is included in the direct testimony of Qwest witness Theresa K. Million. A discussion of the line sharing equipment and associated engineering is included in the testimony of Qwest technical witness Robert Hubbard.

Q. WHAT LINE SHARING CHARGES DOES QWEST PROPOSE TO INTRODUCE IN THIS COST PROCEEDING?

A. Qwest proposes to introduce both recurring and nonrecurring Line Sharing charges. These charges are included in Exhibit PWHJR-1 of this Direct Testimony.

B. SHARED TRANSPORT

Q. PLEASE DESCRIBE QWEST'S SHARED TRANSPORT PRODUCT.

A. Shared Transport consists of interoffice facilities and uses associated trunk ports and switched routing functions currently in place and used by Qwest to complete calls between Qwest end office and tandem switches. The Qwest network can be shared by more than one carrier, including Qwest, between end office switches, and between end office switches and tandem switches.

Q. PLEASE BRIEFLY DESCRIBE THE FUNCTION AND MAKEUP OF THE ROUTING TABLES MENTIONED IN THE PRECEDING ANSWER.

A. As the name implies, routing tables are part of the internal switching fabric and software that support call associated services including connecting a call from one central office to another central office. If a CLEC were to use Qwest's "unbundled" switching, it could make use of the same routing tables, the same trunk ports, and the same direct or local tandem-routed interoffice facilities to deliver its customer's call as Qwest uses to serve its end users.

Q. WHY IS SHARED TRANSPORT ONLY AVAILABLE TO CLECS THAT PURCHASE UNBUNDLED SWITCHING?

A. As I previously discussed, Shared Transport is offered in combination with unbundled switching because the routing tables are internal switch fabric and software contained within the Qwest switches and because the interoffice trunks are terminated on the switch.

Q. WHAT RECURRING CHARGES APPLY TO SHARED TRANSPORT SERVICE?

A. Shared Transport is billed on a per-minute-of-use basis in accordance with the rates described in Exhibit PWHJR-1 of this testimony.

C. UNBUNDLED DARK FIBER (UDF)

Q. PLEASE DESCRIBE QWEST'S UNBUNDLED DARK FIBER (UDF).

A. Unbundled Dark Fiber (UDF) is a deployed, unlit pair of fiber optic cable or strands that connects two points within Qwest's network.

UDF exists in two distinct forms:

(I) UDF Interoffice Facility (UDF-IOF), which constitutes an existing route between two Qwest wire centers; and

(II) UDF-Loop, which constitutes an existing loop between a Qwest wire center and either a fiber distribution panel located at an appropriate outside plant structure or an end-user customer premises.

Q. WHAT RECURRING CHARGES APPLY TO DARK FIBER?

A. The following recurring charges described in Exhibit PWHJR-1 apply to Dark Fiber:

Unbundled Dark Fiber - IOF Recurring Rate Elements

a) UDF-IOF Fiber Interoffice, (Per Route Mile) Rate Element. This recurring rate element applies to the transmission path between the two Qwest wire centers. This is a mileage sensitive element based on the route miles of the UDF.

b) UDF-IOF Fiber Pair Termination Rate Element. This rate element has both a recurring and non-recurring component and provides a termination at the interoffice Fiber Distribution Panel within the Qwest Wire Center. Because the UDF-IOF terminates in at least two Qwest central offices, at least two UDF-IOF terminations would be applied. The nonrecurring component of this charge will be addressed in future testimony.

c) UDF-IOF Two Fiber Cross-Connection Rate Element. This rate element has both a recurring and nonrecurring component and is used to extend the optical connection from the Interoffice Fiber Distribution Panel to the CLEC's optical demarcation point located at the Interconnection Distribution Frame being used by the CLEC. Because there are two ends of the fiber requiring two cross-connections, at least two UDF-IOF fiber cross-connection charges would be applied.

Unbundled Dark Fiber – Loop Recurring Rate Elements.

a) UDF-Loop Fiber Transport (Per Route) Rate Element: This rate element applies to the transmission path between the Qwest wire center and the end-user premise or structure.

UDF-Loop Fiber Pair (Wire Center) Termination Rate Element.

b) UDF-Loop Termination (wire center) Rate Element: this rate element applies to the termination of the UDF-Loop at the Qwest wire center.

UDF-Loop Fiber Pair (Premise) Termination Rate Element.

c) UDF-Loop Termination (Premise) Rate Element: This rate element applies to the termination of the UDF-Loop at the end-user premise or structure.

UDF-Loop Fiber Pair Cross-Connection Rate Element.

d) UDF-Loop Cross-Connection Rate Element: This rate element applies to the cross-connections of the dark fiber that is required at both the Qwest wire center and the customers premise.

D. CUSTOMER TRANSFER CHARGE (CTC)

Q. WHAT IS QWEST'S PROPOSAL FOR APPLICATION OF THE CUSTOMER TRANSFER CHARGE (CTC)?

A. CTC charges should apply when an end-user customer's POTS Service, Private Line Transport Service or Advanced Communication Service is transferred from Qwest to a CLEC. A separate nonrecurring CTC is applicable for each service transferred to a CLEC.

The nonrecurring charge applicable to these services is included in Exhibit PWHJR-1 of this testimony.

Q. PLEASE DISTINGUISH THE TERMS "POTS" AND "ADVANCED COMMUNICATIONS SERVICES."

A. POTS (Plain Old Telephone Service) is basic residential and business service. Advanced Communications Services include Frame Relay, ATM Cell Relay and Transparent LAN Service.

E. CHANNEL REGENERATION

Q. PLEASE DESCRIBE CHANNEL REGENERATION.

A. Channel Regeneration is an optional feature available to CLECs with DS1 and DS3 loops. The channel regenerator reamplifies the DS1 and DS3 signals to overcome signal losses which are caused by the gauge of the copper cable and the length of the loop that travels throughout the wiring within a Qwest wire center.

Q. WHAT CHARGES APPLY TO CHANNEL REGENERATION ORDERED BY THE CLEC?

A. Both recurring and nonrecurring charges apply for channel regeneration. The applicable charges are included in Exhibit PWHJR- 1 of the Direct Testimony.

F. INTERCONNECTION TIE PAIRS (ITP)

Q. WHAT IS AN INTERCONNECTION TIE PAIR (ITP)?

A. The ITP provides the connection between Qwest's DSO, DS1 or DS3 capable loops and the intermediate frame.

Q. WHAT NONRECURRING CHARGES APPLY TO THE ITP?

A. Nonrecurring charges apply per connection for DSO, DS1 and DS3 capable loops. The applicable charges are included in Exhibit PWHJR - 1 of this testimony.

G. UNE PLATFORM: PLAIN OLD TELEPHONE SERVICE (UNE – P POTS)

Q. PLEASE DESCRIBE THE TERM "UNE-P POTS."

A. The term "UNE- P POTS (UNE-P) is used to describe the aggregate of unbundled network elements that may be ordered by a CLEC that wishes to provide either residential service, business service, or both to its end user customers.

Q. IS UNE-P POTS DIFFERENT THAN THE RESIDENTIAL AND BUSINESS SERVICES THAT QWEST OFFERS FOR RESALE BY CLECS?

A. Yes. UNE—P POTS is unlike the residential and business services offered by Qwest under a resale arrangement in that UNE- P POTS consists strictly of the local loop, local switching and shared transport elements. Qwest's residential and business services ordered by CLECs for resale, like Qwest's own residential and business services, include other telecommunications services such as White Pages Listings, Directory Assistance and Operator Services.

Q. HOW DOES QWEST PROPOSE TO CHARGE FOR THE PROVISION OF UNE PLATFORMS?

A. Qwest proposes to charge for the conversion of UNE-P POTS from Qwest to a CLEC when the network configurations that support UNE-P POTS are in place and working for a particular customer for the same type of service.

Q. HOW WILL NONRECURRING CHARGES BE DETERMINED FOR THE CONVERSION OF UNE-P POTS?

A. Separate nonrecurring charges will apply for the mechanized conversion and connection of the first and each additional UNE-P POTS 2-wire voice grade circuit arrangement. Likewise, separate nonrecurring charges will apply for the manual conversion and connection of the first and each additional UNE-P POTS 2-wire voice grade circuit arrangement. The applicable nonrecurring charges are included in Exhibit PWHJR-1 of this Direct Testimony.

V. CONCLUSION

Q. WHAT DOES QWEST RECOMMEND WITH RESPECT TO THE PRODUCTS AND SERVICES PRESENTED IN THIS TESTIMONY?

A. Qwest recommends that this Commission approve Qwest's proposed recurring and nonrecurring charges for the UNE products and related services described in this testimony and Exhibit PWHJR-1 attached hereto.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes it does. Thank you.

BEFORE THE ARIZONA CORPORATION COMMISSION

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESLAE DISCOUNTS	)	DOCKET NO. T-00000A-00-0194

EXHIBIT OF

PERRY W. HOOKS, JR.

QWEST CORPORATION

October 11, 2000

RECURRING AND NONRECURRING CHARGES FOR UNES AND RELATED PRODUCTS AND SERVICES

ELEMENT	RECURRING CHARGE		
	TELRIC	Common	TELRIC + Common
A. 1. DS1 Capable Loop	$ 88.33	$ 4.22	$ 92.55
A. 2. DS3 Capable Loop	$ 77.69	$ 3.71	$ 81.40
A. 3. DS1 Capable Feeder Sub- Loop	$ 979.09	$ 46.81	$ 1, 025.90
B. Line Sharing			
Loop Charge	Zone 1/$ 8.74	Zone 2/$ 10.00	Zone 3/$ 10.00
Option 1A			
Option 1- Splitter on Splitter Bay: Cost per Splitter and Cards (8 shelves)			$ 5.81
Option 1A- Splitter on the Splitter Bay: Data Connections Direct to DLEC			$ 1.71
Option 1A & 1B- Splitter on Splitter Bay: per Each voice and voice/data connection			$ 1.74
	Total		**$ 11.00**
Option 1B			
Option 1- Splitter on Splitter Bay: Cost per Splitter and Cards (8 shelves)			$ 5.81
Option 1B- Splitter on the Splitter Bay: Data Connections Direct to DLEC			$ 1.53
Option 1A & 1B- Splitter on Splitter Bay: per Each voice and voice/data connection			$ 1.74
	Total		**$ 10.82**
Option 2A			
Splitter on the IDF: Data Connections Direct to DLEC			$ 2.97
Option 2B			
Splitter on the IDF: Data Connections to the 410 Block			$ 1.66

Option 3A			
Splitter on the IDF: Data Connections Direct to DLEC			$ 3.48
Option 3B			
Splitter on the IDF: Data Connections to the 410 Block			$ 1.70
C. Shared Transport, per minute of use	$ 0.0011266	$0.0000225	$ 0.0011491
D. Dark Fiber			
Unbundled Dark Fiber I/O per route mile	$ 82.62	$ 3.95	$ 86.57
2 Fiber (orpair) Termination, per termination	$ 7.45	$ 0.36	$ 7.81
2 Fiber Cross Connection, per cross connection	$ 4.14	$ 0.20	$ 4.34
Unbundled Dark Fiber-per 2 fiber loop, per route	$ 112.50	$ 5.38	$117.87
2 Fiber Loop Term, per term at wire center	$ 6.80	$ 0.32	$ 7.12
2 Fiber Loop Term, per term at premises	$ 6.29	$ 0.30	$ 6.59
2 Fiber Cross Connection, per cross connection	$ 4.14	$ 0.20	$ 4.34
E. Channel Regeneration			
DS1 Regeneration	$ 9.18	$ 0.27	$ 9.44
DS3 Regeneration	$ 33.34	$ 0.96	$ 34.31
F. Interconnection Tie Pairs			
DSO, per connection	$ 0.51	$ 0.02	$ 0.53
DS1, per connection	$ 1.53	$ 0.02	$ 1.60
DS3, per connection	$ 15.17	$ 0.73	$ 15.90

ELEMENT	NONRECURRING CHARGES		
	TELRIC	Common	TELRIC + Common
A. 1. DS1 Capable Loop			
Basic Installation			
First Loop (existing)	$ 152.81	$ 7.31	$ 160.12
Ea. Add'l Loop (existing)	$ 122.83	$ 5.87	$ 128.70
Basic Installation With Performance Testing			
First Loop (new)	$ 309.12	$14.78	$ 323.90
Ea. Add'l Loop (new)	$ 238.83	$11.42	$ 250.24
Coordinated Installation With Cooperative Testing			
First Loop	$ 348.33	$16.65	$ 364.98
Ea. Add'l Loop	$ 258.68	$12.37	$ 271.05
Coordinated Installation Without Testing			
First Loop (existing)	$ 161.75	$ 7.73	$ 169.48
Each Add'l Loop (existing)	$ 131.77	$ 6.30	$ 138.07
A. 2. DS3 Capable Loop			
Basic Installation			
First Loop (existing)	$ 152.81	$ 7.31	$ 160.12
Ea. Add'l Loop (existing)	$ 122.83	$ 5.87	$ 128.70
Basic Installation With Performance Testing			
First Loop (new)	$ 309.12	$14.78	$ 323.90
Ea. Add'l Loop (new)	$ 238.83	$11.42	$ 250.24
Coordinated Installation With Cooperative Testing			

First Loop	$ 348.33	$16.65	$ 364.98
Ea. Add'l Loop	$ 258.68	$12.37	$ 271.05
Coordinated Installation Without Testing			
First Loop (existing)	$ 161.75	$ 7.73	$ 169.48
Each Add'l Loop (existing)	$ 131.77	$ 6.30	$ 138.07
A. 3. DS1 Capable Feeder Sub-Loop			
DS1 Feeder Sub-Loop, first	$ 324.02	$ 15.49	$ 339.51
DS1 Feeder Sub-Loop, ea. add'l	$ 254.30	$ 12.16	$ 266.46
B. Line Sharing			
Engineering			$ 1, 315.99
Option 1A			
Option 1- Splitter on Splitter Bay: Cost per Splitter and Cards (8 shelves)			$ 564.81
Option 1A- Splitter on the Splitter Bay: Data Connections Direct to DLEC			$1, 321.57
Option 1A & 1B- Splitter on Splitter Bay: per Each voice and voice/data connection			$1, 338.99
		Total	**$4, 564.36**
Option 1B			
Option 1- Splitter on Splitter Bay: Cost per Splitter and Cards (8 shelves)			$ 564.81
Option 1B- Splitter on the Splitter Bay: Data Connections Direct to DLEC			$ 1, 180.80
Option 1A & 1B- Splitter on Splitter Bay: per Each voice and voice/data connection			$ 1, 338.99
		Total	**$ 4, 423.58**
Option 2A			
Splitter on the IDF: Data Connections Direct to DLEC			$ 2,288.62
Option 2B			
Splitter on the IDF: Data Connections to the 410 Block			$ 1, 280.90
Option 3A			
Splitter on the IDF: Data Connections Direct to DLEC			$ 2, 686.92
Option 3B			
Splitter on the IDF: Data Connections to the 410 Block			$ 1, 310.82
C. Dark Fiber			

per occurrence, per route- first pair	$552.95	$ 26.44	$ 579.38
per occurrence, per route –ea. add'l pair	$276.66	$ 13.23	$ 289.89
optical cross connect – per pair, per C.O.	$ 21.15	$ 1.01	$ 22.16
initial records inquiry C.O. to C.O. or C.O. to customer premise	$156.47	$ 7.48	$ 163.95
mid-span splice/structure point inquiry	$199.51	$ 9.54	$ 209.05
field verification and quote preparation	$ 1,457.18	$ 69.67	$1,526.85
D. Customer Transfer Charge (CTC)			
CTC POTS, 1st Mechanized	$ 7.22	$ 0.35	$ 7.57
CTC POTS, ea. add'l Mechanized	$ 1.36	$ 0.06	$ 1.42
CTC POTS, 1st Manual	$ 15.98	$ 0.76	$ 16.74
CTC POTS, ea. add'l Manual	$ 2.66	$ 0.13	$ 2.79
CTC Private Line, 1st	$ 40.27	$ 1.93	$ 42.20
CTC Private Line, ea. add'l	$ 40.27	$ 1.93	$ 42.20
CTC Advanced Communications Service, Per circuit	$ 43.49	$ 2.08	$ 45.57
E. Channel Regeneration			
DS1 Regeneration	$ 472.80	$ 22.60	$ 495.41
DS3 Regeneration	$ 1, 781.39	$ 85.17	$1,866.55
F. UNE-P POTS			
Conversion			
UNE Platform POTS - 1st Mech	$ 7.22	$ 0.35	$ 7.57
UNE Platform POTS – Ea. Add'l Mech	$ 1.36	$ 0.06	$ 1.42
UNE Platform POTS – 1st Manual	$ 15.98	$ 0.76	$ 16.74
UNE Platform POTS – Ea. Add'l Manual	$ 2.66	$ 0.13	$ 2.79
Connection			
UNE Platform POTS - 1st Mech	$ 65.58	$ 3.14	$ 68.72
UNE Platform POTS – Ea. Add'l Mech	$ 16.86	$ 0.81	$ 17.67
UNE Platform POTS – 1st Manual	$ 80.91	$ 3.87	$ 84.78
UNE Platform POTS – Ea. Add'l Manual	$ 18.17	$ 0.87	$19.04

BEFORE THE ARIZONA CORPORATION COMMISSION

IN THE MATTER OF INVESTIGATION	)	
INTO QWEST CORPORATION'S	)	
COMPLIANCE WITH CERTAIN	)	DOCKET NO. T-00000A-00-0194
WHOLESALE PRICING REQUIREMENTS	)	
FOR UNBUNDLED NETWORK	)	AFFIDAVIT OF PERRY W.
HOOKS		
ELEMENTS AND RESALE DISCOUNTS	)	
	)	
STATE OF ARIZONA	)	
COUNTY OF MARICOPA	)	

Perry W. Hooks Jr., of lawful age being first duly sworn, depose and states:

1. My name is Perry W. Hooks Jr. I am Director – Wholesale Switching & Trunking Services for Qwest Corporation. I have caused to be filed written testimony and exhibits in support of Qwest Corporation in Docket No. UT-003013.

2. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge and belief.

Further affiant sayeth not.

Perry W. Hooks Jr.

Perry W. Hooks Jr.

SUBSCRIBED AND SWORN to before me this 16th day of October, 2000.

[illegible]

Notary Public residing at
Denver, Colorado.

My Commission Expires: 4-13-02

D. M. (MARTI) GUDE - HAS TESTIFIED ON THE SUBJECT OF EMBEDDED AVOIDED COST STUDIES IN THE FOLLOWING:

STATE	CASE/ DOCKET NO.	CASE NAME	DATE OF TESTIMONY	DATE OF CROSS
Colorado	96S-331T	Re: The Investigation and Suspension of Tariff Sheets Filed by U S WEST Communications, Inc., with Advice Letter No. 2617, Regarding Tariffs for Interconnection, Local Termination, Unbundling and Resale of Services	D - 12-13-96 (Filed by D. Elder) R - 3-28-97 Sup R - 4-9-97	4-16-97
Iowa	RPU-96-9	In Re: U S WEST Communications, Inc. (Cost Docket)	D - 3-26-97 Sup D - 5-19-97 R - 7-30-97	Panel: 5-29-97 D - 6-2-97 R - 9-19-97
Montana	D96.11.200	IN THE MATTER OF the Interconnection Contract Negotiations Between AT&T Communications of the Mountain States, Inc. and U S WEST Communications, Inc. Pursuant to 47 U.S.C. Section 252	D - 12-26-96 R - 1-22-97 SR - 1-29-97	2-4-97
Montana	D2000.6.89	IN THE MATTER of Qwest Corporation's Application to Establish Rates For Interconnection, Unbundled Network Elements, Transport and Termination, and Resale Services	D - 8-25-2000 Sup D - 10-9-2000	
Nebraska	C-1385	In Re The Matter Of A Petition For Arbitration of an Interconnection Agreement Between AT&T Communications of the Midwest, Inc. and U S WEST Communications, Inc.	D - 10-29-96	10-31-96 and 11-1-96

D. M. (MARTI) GUDE - HAS TESTIFIED ON THE SUBJECT OF EMBEDDED AVOIDED COST STUDIES IN THE FOLLOWING:

STATE	CASE/ DOCKET NO.	CASE NAME	DATE OF TESTIMONY	DATE OF CROSS
Nebraska	C-1473	In The Matter Of Cox Nebraska Telecom, Inc.'s Petition For Arbitration Pursuant To Section 252(b) of the Telecommunications Act of 1996 To Establish An Interconnection Agreement with U S WEST Communications, Inc.	D - 10-1-97	10-1-97
Nebraska	C-1415	In the Matter of the Commission on its Own Motion to Investigate U S WEST Communications' Cost to Establish Rates for Interconnection, Unbundled Network Elements, Transport and Termination and Resale Services	D - 8-12-98	12-10-98
New Mexico	96-411-TC	In The Matter Of the Interconnection Contract Between AT&T Communications of the Mountain States, Inc. and U S WEST Communications, Inc., Pursuant to 47 U.S.C. Section 252	Reply - 12-20-96 R - 1-21-97	2-14-97 and 2-17-97
New Mexico	96-310-TC 97-334-TC (Phase II)	In the Matter of the Consideration of the Adoption of a Rule Concerning Cost Methodologies	D - 7-8-98 R - 8-5-98	8-27-98
North Dakota	PU-453-96-497	AT&T Communications of the Midwest, Inc. Interconnection Arbitration Application	D - 1-13-97 R - 2-14-97	2-28-97
North Dakota	PU-314-97-12	Re: U S WEST Communications, Inc. Interconnection / Wholesale Pricing Investigation	D - 12-22-97	Wholesale portion was postponed

D. M. (MARTI) GUDE - HAS TESTIFIED ON THE SUBJECT OF EMBEDDED AVOIDED COST STUDIES IN THE FOLLOWING:

STATE	CASE/ DOCKET NO.	CASE NAME	DATE OF TESTIMONY	DATE OF CROSS
South Dakota	TC96-184	In The Matter Of the Interconnection Contract Negotiations Between AT&T Communications of the Midwest, Inc. and U S WEST Communications, Inc. Pursuant to 47 U.S.C. Section 252	D - 1-17-97 R - 1-24-97	indefinitely 2-6-97
Utah	96-095-01	In the Matter of MCI metro Access Transmission Services, Inc.'s (MCImetro's) Consolidated Petitions for Arbitration with U S WEST Communications, Inc. (U S WEST) Pursuant to Section 252(b) of the Federal Telecommunications Act of 1996	R - 11-22-96	Did not go to Hearing
Utah	99-049-20	In the Matter of the Investigation of the Resale Discount Rates of U S WEST Communications, Inc. For Service Provided to Other Utah Certified Local Exchange Carriers	D - 10-29-99 Sup D - 12-3-99	1-6-2000
Washington	UT-960310	In the Matter of the Petition for Arbitration of an Interconnection Agreement Between MCImetro Access Transmission Services, Inc. and U S WEST Communications, Inc. Pursuant to 47 U.S.C. Section 252	R - 11-8-96	11-19-96

D. M. (MARTI) GUDE - HAS TESTIFIED ON THE SUBJECT OF EMBEDDED AVOIDED COST STUDIES IN THE FOLLOWING:

STATE	CASE/ DOCKET NO.	CASE NAME	DATE OF TESTIMONY	DATE OF CROSS
Washington	UT-960369	In the Matter of the Pricing Proceeding for Interconnection, Unbundled Elements, Transport and Termination, and Resale	D - 3-28-97 R - 4-25-97	7-18-97
	UT-960370	In the Matter of the Pricing Proceeding for Interconnection, Unbundled Elements, Transport and Termination, and Resale for U S WEST COMMUNICATIONS INC		
	UT-960371	In the Matter of the Pricing Proceeding for Interconnection, Unbundled Elements, Transport and Termination, and Resale for GTE NORTHWEST INCORPORATED		
Washington	UT-960369 UT-960370 UT-960371 (Phase II)		D - 7-9-98	Testimony was stipulated

BEFORE THE ARIZONA CORPORATION COMMISSION

CARL J. KUNASEK
Chairman
JAMES M. IRVIN
Commissioner
WILLIAM A. MUNDELL
Commissioner

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	DOCKET NO. T-00000A-00-0194

EXHIBITS OF

D. M. (MARTI) GUDE

QWEST CORPORATION

OCTOBER 11, 2000

INDEX OF EXHIBITS

<u>**GUDE Direct Exhibit No.**</u>

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation – DKM 1 through 6
Exhibits of D. M. (Marti) Gude
October 11, 2000

REDACTED

BEFORE THE ARIZONA CORPORATION COMMISSION

CARL J. KUNASEK
CHAIRMAN
JIM IRVIN
COMMISSIONER
WILLIAM A. MUNDELL
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	**DOCKET NO. T-00000A-00-0194** **AFFIDAVIT OF D. M. (MARTI) GUDE**
STATE OF NEBRASKA	:	**SS**
COUNTY OF DOUGLAS	)	

D. M. (Marti) Gude, of lawful age being first duly sworn, deposes and states:

1. My name is D. M. (Marti) Gude. I am Director - Cost Accounting in the Policy and Law – Regulatory Operations organization for Qwest Corporation in Omaha, Nebraska.

2. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge and belief.

D. M. (Marti) Gude
D. M. (Marti) Gude

SUBSCRIBED AND SWORN to before me this 9 day of October 2000.

GENERAL NOTARY-State of Nebraska
TERESA M. PEATROWSKY
My Comm. Exp. March 17, 2004

Teresa M Peatrowsky
Notary Public

My Commission Expires:

3/17/2004

BEFORE THE ARIZONA CORPORATION COMMISSION

CARL J. KUNASEK
CHAIRMAN
JIM IRVIN
COMMISSIONER
WILLIAM A. MUNDELL
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS AND UNBUNDLED NETWORK ELEMENTS AND RESLAE DISCOUNTS	) DOCKET NO. T-00000A-00-0194

DIRECT TESTIMONY OF

Robert F. Kennedy

QWEST CORPORATION

October 11, 2000

TESTIMONY INDEX

I. EXECUTIVE SUMMARY

In my testimony I describe the many types of collocation that Qwest now offers CLECs. These offerings allow Qwest to comply with the many FCC orders that have been issued over the last few years. I present rates appropriate for use in most standard situations that cover the overwhelming majority of collocation installations. I present these rates by separating them into groupings that correspond with the type of collocation being priced. Finally I recommend that this Commission adopt Qwest's rates for collocation.

II. IDENTIFICATION OF WITNESS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION WITH QWEST CORPORATION.

A. My name is Robert F. ("Bob") Kennedy. I am employed by Qwest Corporation ("Qwest") as a manager in the Wholesale Local Markets organization. My business address is 1314 Douglas-on-the-Mall, 6th floor, Omaha, Nebraska 68012.

Q. PLEASE BRIEFLY REVIEW YOUR TELECOMMUNICATIONS INDUSTRY WORK EXPERIENCE.

A. I have 28 years experience in the telecommunications, both in the field and in corporate operations. In 1972, I joined QWEST when it was known as Northwestern Bell. For the next thirteen years I held several field positions including lineman, cable splicer, instructor and course developer for outside plant courses. I was also Northwestern Bell's representative that assisted in designing and implementing the maintenance strategy for digital pair gain systems.

In 1985, I joined Qwest's Custom Pricing Organization developing cost models for emerging products such as DS1, DS3, SHARP and SHNS. In addition, I developed models that provided economic analysis and estimated costs for large custom price requests in Minnesota, Nebraska, South Dakota, North Dakota and Iowa.

In 1995, I joined Qwest's newly organized interconnection group formed for the purpose of negotiating interconnection agreements with CLECs (Competitive Local Exchange Carriers) pursuant to the Telecommunications Act of 1996. I was a lead negotiator in the interconnection group and held that responsibility until April 1, 2000.

Q. PLEASE GENERALLY DESCRIBE YOUR RESPONSIBILITIES IN YOUR CURRENT POSITION.

A. Since April 1,2000 I have been a witness in the Wholesale Markets organization. In this position within the Wholesale Markets organizations of Qwest, I have testified on behalf of Qwest concerning wholesale products and services before state regulatory bodies in arbitration cases, rulemakings and complaint proceedings.

Q. PLEASE BRIEFLY REVIEW YOUR FORMAL HIGHER EDUCATION BACKROUND.

A. I hold a Bachelor of Science degree in education from the University of Nebraska, Omaha

III. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. My collocation testimony will address the collocation products including descriptions of the proposed collocation rate elements. These collocation service offerings comply with the national rules for collocation established by the FCC's First Report and Order, CC Docket No. 96-98, Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, released August 8, 1996 (First Interconnection Order), and the First Report and Order, CC Docket No. 98-147, Deployment of Wireline Service Offering Advanced Telecommunications Capability, released March 31, 1999 (Advanced Services Order). The scope of this testimony is focused on rate elements.

IV. COLLOCATION OVERVIEW

Q. PLEASE PROVIDE A BRIEF OVERVIEW OF COLLOCATION.

A. Qwest facilitates interconnection and access to unbundled network elements (UNEs) within Qwest's central office buildings through collocation in accordance with the terms and conditions of the CLEC's respective interconnection agreements. Both virtual and various forms of physical collocation are available to CLECs.

Collocation is for the purpose of interconnection and access to UNEs. Collocation allows a CLEC to place cables into a Qwest central office and terminate those cables on transmission equipment owned by the CLEC. In physical collocation the CLEC installs and maintains its own equipment in the collocation space provided by Qwest. The CLEC's transmission equipment can be interconnected to the Qwest network. Collocation also facilitates CLEC access to unbundled network elements and, thus, is integral to the provision of unbundled network elements.

Q. DOES QWEST'S COLLOCATION OFFERINGS COMPLY WITH THE FEDERAL COMMUNICATIONS COMMISSION'S (FCC) ORDERS CONCERNING COLLOCATION?

A. Yes. The FCC's First Interconnection Order established national rules to provide physical and virtual collocation. Collocation allows CLECs to collocate equipment to obtain interconnection or to access unbundled network elements. The scope of my testimony focuses on the Qwest collocation rate elements. The Qwest testimony of Ms.Teresa Million will provide the costs used to develop the Qwest proposed rates for the collocation rate elements.

Q. PLEASE DESCRIBE THE TYPES OF COLLOCATION.

A. There are two categories of collocation – physical and virtual collocation. There are six types of Collocation available through a Qwest Interconnection Agreement.

(1) **Caged Physical:** Caged Physical is a collocation arrangement where the CLEC's equipment is surrounded by a cage that provides an increased level of security to the CLEC's equipment.

(2) **Cageless Physical:** Cageless Physical collocation is when a CLEC's equipment is placed in the Qwest central office adjacent to other CLEC equipment, but is not separated from other central office equipment by a cage or walls.

(3) **Shared Caged:** Shared Caged collocation allows two or more CLECs to share a single caged collocation enclosure; however, only one CLEC obtains a Caged Physical Collocation arrangement from Qwest. CLECs share the space according to the terms and conditions agreed upon by the two CLECs.

(4) **Virtual Collocation:** Virtual collocation is when the CLEC's equipment is turned over to Qwest (with a no cost lease) for engineering, installation and maintenance. Virtual collocation is available on a per shelf basis.

(5) **Adjacent Collocation:** Qwest will provide collocation in adjacent controlled environmental vaults or similar structures to the extent technically feasible.

Because zoning and other state and local regulations may affect the viability of adjacent collocation, and the need to exercise some measure of control over design or construction parameters, and the need to ensure reasonable safety and maintenance requirements, adjacent collocation is available through the Bona Fide Request (BFR) process.

(6) **ICDF Collocation:** With ICDF collocation a CLEC does not need to collocate it's equipment in the Qwest central office; however, the CLEC may have access to the ICDF to combine UNEs. The ICDF is a distribution frame shared by multiple providers including Qwest. With ICDF collocations a CLEC would order each unbundled element, a single termination (on an individual basis) and an ITP interconnection tie pair (to connect the two elements).

Note: Interconnection Tie Pair, which is used with UNEs, is discussed in the Qwest testimony of Mr. Hooks. Channel regeneration may be necessary with UNE's and is also addressed in the Qwest testimony of Mr. Hooks.

Q. WHAT ARE THE DIFFERENCES BETWEEN PHYSICAL AND VIRTUAL COLLOCATION?

A. Under physical collocation, floor space in a Qwest central office is leased to the CLEC. The CLEC's employees access that floor space for the purpose of installing and maintaining the CLEC's own transmission equipment.

With virtual collocation, leased floor space is generally not required. The CLEC procures and then delivers its equipment to Qwest. Qwest then installs and maintains the CLEC's equipment. The CLEC does not have access to the virtual collocation.

Q. DO CLECS HAVE THE OPTION OF PHYSICAL OR VIRTUAL COLLOCATION?

A. Yes. In accordance with the FCC's First Interconnection Order and terms and conditions of their respective interconnection agreements, virtual and physical collocation are available to CLECs.

V. COLLOCATION RATE ELEMENTS

Q. WHAT SPECIFIC RATE ELEMENTS APPLY TO QWEST'S COLLOCATION?

A. The rate elements that apply to collocation fall into three categories: (1) rate elements common to all standard collocations; (2) rate elements unique to physical collocation; and (3) rate elements unique to virtual collocation. Qwest will recover collocation costs through both recurring and non-recurring charges. The charges are determined by the scope of work to be performed based on the information provided by the CLEC on the Collocation Order Form. A quote is then developed by Qwest for the work to be performed.

Q. WHAT IS MEANT BY A "STANDARD" COLLOCATION?

A. The use of the term standard does not depict a type of collocation. It is meant to say these costs are appropriate only in standard configurations. For example, these costs will be appropriate in a Central Office building but might not be appropriate when collocation is being established in a non-standard location such as, adjacent collocation which is not located in a central office. That is to say, when collocation pricing is being developed in a central office building the price elements that are used to develop the collocation prices would be from rates catergorized as "standard" ; however, in an adjacent collocation ,which is likely to be located in a Qwest controlled enviromental vault (CEV), the Bona Fide Request (BFR) process would be used and some individual case base (ICB) rates would be used where "standard" rates are not appropriate.

Q. WHY MIGHT THESE PRICES NOT BE APPROPRIATE OUTSIDE A CENTRAL OFFICE BUILDING?

A. In order to answer this question please use the following definition of Central Office as a point of reference:

> Central Office: U S WEST's primary point to connect customers to the network. These highly secure buildings contain computerized network switching equipment.

The collocation rate elements presented in my testimony are developed based on assumptions that collocation will be provided in a Central Office. Central Offices contain network switching equipment they are likely to have the network items necessary to provide collocation. Central Offices can and do vary greatly in layout. Assumptions can be made and assumptions were developed that can be used to produce "standard" costs. Outside a Central Office it is impossible to make such assumptions as the network items may not be present or if present could vary greatly in how they are utilized.

Q. PLEASE DESCRIBE THE RATE ELEMENTS THAT ARE COMMON TO ALL COLLOCATION.

A. The following rate elements are common to all types of standard collocation:

(1) **Quote Preparation Fee (QPF):** QPF is a non-refundable charge for the work required to verify space, power, cable terminations, review design requested, and develop a price quote for the total costs to the CLEC for its Collocation request.

(2) **Collocation Entrance Facility Charge:** Qwest offers three Fiber Collocation Entrance Facility options; the first is a Standard Fiber Entrance Facility, the second is a Cross Connect Fiber Entrance Facility, and the third is an Express Fiber Entrance Facilities. These options apply to Caged Physical Collocation, Cageless Physical Collocation and Virtual Collocation. Fiber Entrance Facilities provide the connectivity between the CLEC's collocated equipment

within the Qwest central office and a C-POI (Collocation Point of Interconnection) outside the central office where the CLEC shall terminate its fiber optic facility.

The CLEC is responsible for providing its own fiber facilities to the (C-POI) outside the Qwest Central Office. Qwest will extend the fiber cable from the C-POI to a Fiber Distribution Panel (FDP). Additional fiber, conduit and associated riser structure will then be provided by Qwest from the FDP to continue the run to the CLEC's leased Collocation space (Caged or Cageless Physical Collocation) or to the CLEC's equipment (Virtual Collocation). The Qwest provided facility from the C-POI to the leased Collocation space (Physical Collocation) or CLEC equipment (Virtual Collocation) shall be considered the Collocation Fiber Entrance Facility.

<u>(1st) Standard Fiber Entrance Facility:</u> The standard fiber entrance facility provides fiber connectivity between a CLEC's fiber facilities delivered to the C-POI and the CLEC's Collocation space in increments of 12 fibers. A fiber interconnection cable is placed between a CLEC's Collocation space and the FDP. The FDP provides Qwest with test access and a connection point between the transport fiber and the CLEC's interconnection cable.

<u>(2nd)Cross Connect Fiber Entrance Facility:</u> The cross connect fiber entrance facility provides fiber connectivity between a CLEC's fiber facilities delivered to a C-POI and multiple locations within the Qwest Wire Center. The

CLEC's fiber cable is spliced into a Qwest provided shared fiber entrance cable in 12 fiber increments. The fiber cable terminates in a fiber distribution panel. This fiber distribution panel provides test access and flexibility for cross connection to a second fiber distribution panel. Fiber interconnection cables connect the second fiber distribution panel and equipment locations in the Wire Center. This option has the ability to serve multiple locations or pieces of equipment within the office. This option provides maximum flexibility in distributing fibers within the central office and readily supports Virtual and Cageless Physical Collocation and multiple CLEC locations in the office.

(3rd) Express Fiber Entrance Facility: Qwest will place a CLEC provided fiber cable from the C-POI directly to CLEC's Collocation space. This option will not be available if there is less than one full sized conduit (for emergency restoration) and 2 innerducts (one for emergency restoral and one for a shared entrance cable).

(3) **Cable Splicing Charge:** The cable splicing charge recovers the labor and equipment to perform a subsequent splice to a CLEC provided fiber optic cable. Splicing is charged per set-up and per fiber spliced rate elements.

(4) **AC Power Feed**: The AC Power feed is optional. The AC Power feed recovers the cost of Qwest providing for the engineering and installation of

wire, conduit and support, breakers and miscellaneous electrical equipment necessary to provide the AC power, with generator backup, to the CLEC's space. The AC Power Feed is available with single or triple phase options. The recurring charge for AC Power Feed usage is rated on a per month, per ampere basis. The AC Power feed is per amp, per foot, per month and non-recurring.

(5) **Inspector Labor Charge:** The Inspector labor charge provides for Qwest qualified personnel, acting as an inspector, when a CLEC requires access to the C-POI after the initial installation. A call out of an inspector after business hours is subject to a minimum charge of three hours. The minimum call out charge shall apply when no other employee is present in the location, and an 'off-shift' Qwest employee (or contract employee) is required to go "on-shift" on behalf of CLEC. This is a non-recurring charge.

(6) **Collocation Terminations:** A collocation termination is between the CLEC's collocation space and the ICDF. Collocation Terminations recover the cost of the terminations, tie cables, associated racking and terminating blocks and panels required to connect Qwest unbundled network elements to the CLEC's equipment. A monthly and non-recurring charge, based on the type of connection being used, applies for cable placement, cable, block placement, and blocks required by the CLEC.

(A) Terminations are purchased by a CLEC to connect their Caged or Cageless Collocation to the ICDF for the purpose of accessing unbundled network elements. This element includes Qwest provided termination blocks, installation labor between the CLEC collocated equipment and the appropriate cross connect device. Cabling is also required and may be provided by the CLEC or at their request Qwest will provide cabling at an additional charge. When Qwest provides the cabling, Collocation Block Termination rates will apply. When the CLEC provides the cabling, Collocation Termination rates, on a per termination basis, will apply.

(B) Terminations must be purchased in the following increments: DS0 in blocks of 100 terminations; DS1 in increments of 28 terminations; DS3 in increments of one (1) coaxial cable or fiber pair.

(7) **Security:** Security charges recover the cost for security measures such as, card readers and identification cards at Qwest's central office. A recurring monthly charge is applied, per CLEC employee, for access cards and per CLEC employee, per central office for card access.

(8) **Central Office Clock Synchronization:** Central Office Clock Synchronization is an optional service. The CLEC must determine the synchronization requirements for its equipment and notify Qwest of these requirements when ordering the clock signals. Central office synchronizations

are required for collocation involving digital services or connections. Synchronization may be required for analog services Central office synchronization is available where Qwest wire centers are equipped with Building Integrated Timing Supply (BITSA) a monthly charge is applied on a per port basis.

Q. PLEASE DESCRIBE THE RATE ELEMENTS THAT ARE UNIQUE TO CAGED AND CAGELESS PHYSICAL COLLOCATION PRODUCTS.

A. There are three types of charges that are unique to physical collocation. The first is Space Construction and Site Preparation; the second is Floor Space Lease (Rent) and the third is Grounding which applies only to a caged collocation. Each of these rate elements are described below:

(1) Space Construction and Site Preparation: This charge recovers the cost of engineering the job, constructing an enclosure around the CLEC's leased space, providing a single power feed, overhead structures to support cable racking and CLEC equipment, cable racking, additional lighting, and the supporting environmental requirements (heating ventilation and air conditioning).

There are separate non-recurring charges for caged and cageless collocation arrangements.

The physical caged collocation space construction charge includes the provisioning of one 60 amp power feed. If the CLEC requests a caged collocation with a power feed of 20, 30, 40, 100, 200, 300 or 400 amperes, an adjustment to the space construction charge is applied for the amps requested.

The physical cageless collocation space construction charge includes the provisioning of one 40 amp power feed. If the CLEC requests a cageless collocation with a power feed of 20, 30, or 60 amperes per bay, an adjustment to the space construction charge is applied for the amps requested.

Consistent with the FCC's First Interconnection Order, CLECs have the option to subcontract the construction of the caged enclosure to contractors approved by Qwest, in conformance with Qwest's standards.

The cageless collocation is designed to provide two bays for the CLEC's equipment. If the CLEC requires additional bays, an incremental non-recurring charge, per bay, is applied to recover the prorated costs of the supporting structure, cable racking, lighting, and grounding facilities.

- 48 Volt DC Power Usage Charge: Recovers the cost of purchasing power from the electric company and the cost of the power plant and maintenance to provide power to the CLEC's equipment. The power plant consists of the back up power generator, rectifiers, power boards, battery distribution frame boards, batteries and the cable and support structure that connects all these components. The monthly charge is based on a per amp basis.

DC Power Feed: Recovers the cost for the cables, lugs, fuses and Htaps required to hook the cables to the power network. Additional power feed cables are connected directly to the CLEC's equipment and dedicated exclusively for the use by the CLEC. A power feed consists of an original (A feed) with two cables and a back up (B feed) with two cables, four for the combined A & B feed. Power feed is available in 20, 30, 40, and 60 amps for all physical collocation and 100, 200, 300, and 400 amps for caged collocation only. Monthly and non-recurring charges are based on size and distance per feed.

(2) Space Lease This charge recovers the cost of one 110 AC, 15 amp electrical outlet, preventative maintenance and repair of climate controls, filters, fire and life systems and alarms, mechanical systems, and HVAC, bi-weekly housekeeping service and general repair and maintenance. A recurring monthly charge applies on a per square foot basis.

(3) Grounding: The grounding rate element recovers the cost of extending the building DC ground from the grounding plane of the central office to the CLEC's caged collocation space. There is a monthly and non-recurring charge per size, per foot.

Q. PLEASE DESCRIBE THE RATE ELEMENTS THAT ARE UNIQUE TO VIRTUAL COLLOCATION.

A. There are two rate elements unique to virtual collocation; Equipment Bay/per Shelf and Labor Charges, which include: Engineering, Installation, Training, and Maintenance. Each of these charges are described below:

(1) **Equipment Bay/per shelf:** Recovers the cost of the equipment rack in which the CLEC's virtually collocated equipment and fuse panel are mounted. Each bay includes the 7 foot bay, its installation and all necessary environmental supports (e.g., floor space, heat/air conditioning and lighting). Physical dimensions of the equipment bay are 84 inches high by 26 inches wide by 12 inches deep. Each bay is capable of providing space for six shelves. The cost of the equipment bay is recovered through a recurring rate per month, per equipment shelf.

(2) **Labor Charges:** Recovers the cost of Qwest provisioning and maintaining the CLEC's equipment (a) engineering, (b) installation, (c) training, and (d) maintenance. Except for training labor, there are two labor rates: one for labor performed during regular business hours (8:00 AM to 5:00 PM Monday through Friday, except holidays) and a second for labor performed outside of regular business hours. The labor charges are described below:

(a) **Engineering Labor:** Engineering Labor recovers the cost of planning and engineering the installation, change or removal of the CLEC's equipment and associated supporting equipment such as power, cabling, cable racking, frame terminations, lighting, and entrance facility. Qwest charges CLECs per half-hour of engineering labor performed during regular business hours and a somewhat higher rate per half-hour for engineering performed outside of regular business hours.

<u>(b) **Installation Labor:**</u> Installation Labor recovers the cost of the installation, change or removal of the CLEC's equipment and associated supporting equipment. Installation labor is assessed in half-hour increments for installation labor performed during regular business hours and at a somewhat higher rate per half-hour for installations performed outside of regular business hours.

<u>(c) **Maintenance Labor:**</u> maintenance labor provides for the labor necessary for repair of out of service and/or service affecting conditions and preventative maintenance of a CLEC's virtually collocated equipment. The CLEC is responsible for ordering maintenance spares. Qwest will perform maintenance and/or repair work upon receipt of the replacement maintenance spare and/or equipment from a CLEC. A call out of a maintenance technician after business hours is subject to a minimum charge of three hours.

BEFORE THE ARIZONA CORPORATION COMMISSION

CARL J. KUNASEK
CHAIRMAN
JIM IRVIN
COMMISSIONER
WILLIAM A. MUNDELL
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	) **DOCKET NO. T-00000A-00-0194**

DIRECT TESTIMONY OF

ROBERT J. HUBBARD

QWEST CORPORATION

OCTOBER 11, 2000

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I. IDENTIFICATION OF WITNESS

Q. PLEASE STATE YOUR NAME, EMPLOYER AND BUSINESS ADDRESS.

A. My name is Robert J. Hubbard. I am employed by Qwest Corporation, as a Manager of Technical Support in the Interconnection Planning Department. My business address is 700 West Mineral, Littleton, Colorado 80102.

Q. BRIEFLY OUTLINE YOUR EMPLOYMENT BACKGROUND.

A. I am a Manager of Technical Support in Qwest's Interconnection Strategies Group, the group responsible for the development of strategies to implement the unbundling of Qwest's network as required by the Telecommunications Act of 1996 ("the Act"). I provide technical support regarding unbundling issues to the Qwest Network and Public Policy departments.

I have over 33 years experience with two Regional Bell Operating Companies, Qwest and Indiana Bell Telephone Co, in their network departments. I worked for over 11 years at Indiana Bell and Qwest as a cable splicer and as a cable repairman involved in all aspects of splicing and repairing copper cables. At Qwest, I eventually moved from splicing and repairing into the engineering department as a design engineer for outside plant, designing copper and fiber facilities, and Analog and Digital Carrier Systems. I then went into the planning department as an outside plant planner, in which I planned for future jobs involving fiber cable placement and upgrades to the existing outside plant network. In 1997, I moved into my present job as a Manager of Technical support in the Interconnection Planning Department.

I have had substantial involvement in Qwest's preparation for line sharing. For example, I studied possible network architectures in advance of Qwest's response to the FCC's First Report and Order and Further Notice of Proposed Rulemaking in Docket No. 98-147 ("Line Sharing Order"). Also, in Minnesota, I participated in the technical trials -- both the Lab and Field Tests -- that were ordered by the Minnesota Commission last year. During both the Lab and Field Tests, I provided technical and engineering input, and evaluated the outcome of the tests.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to describe the network design and engineering issues related to line sharing. In this docket, Qwest will ask the Commission to set prices for the two types of architecture Qwest intends to use in the central offices, requested by the CLEC/DLEC for line sharing, in Arizona. First, I describe the elements that are required to provide line sharing and identify how those elements relate to the costs that Qwest will incur to provide line sharing. Second, I explain the benefits and detriments of each of the architectures described above. Third, I address two of the five general categories of costs that ILECs such as Qwest could incur to deploy line sharing and, therefore, may recover from CLECs/DLECs. These categories of costs relate to: (1) cross connections; (2)

splitters. The other cost categories -- shared line costs and Operational Support Systems costs -- are addressed in the testimony of other Qwest witnesses.

III. LINE SHARING DESCRIPTION AND BACKGROUND

Q. PLEASE BRIEFLY EXPLAIN WHAT IS MEANT BY LINE SHARING.

A. Line sharing is the joint and simultaneous use by two different telecommunications carriers of distinct frequency ranges of one loop. In a line sharing arrangement, Qwest provides voice service to the end-user using the voice band frequencies, while the CLEC/DLEC provides data service on the frequency range above the voice band. Through the separation of the voice frequency from the data frequency, one loop can carry both voice and data traffic simultaneously and, potentially, each type of traffic could be carried by a different telecommunications carrier.

At present, however, line sharing only is possible in situations where CLECs/DLECs intend to provide a data service that does not significantly degrade the voice service being provided by ILECs. Given current technology, many types of data services, including SDSL and HDSL, cause unacceptable levels of interference to voice service being carried on shared lines. The FCC recognized this in the Line Sharing Order and determined that only three types of data services, including ADSL, currently are compatible with voice service in a line sharing environment. Line Sharing Order (CC Docket No. 98-147) at ¶ 71.

Q. PLEASE DESCRIBE HOW A TRADITIONAL VOICE CALL IS ROUTED THROUGH THE NETWORK WITHOUT ANY LINE SHARING.

A. A normal voice call comes in to the central office from a home, business, or other outside location on a loop that, depending on the type of frame located in the central office, is connected to a COSMIC[1] frame or Main Distribution Frame ("MDF"). On the frame, the voice call is cross connected to either the Office Equipment ("OE") side of the COSMIC or MDF, or connected through an Intermediate Distribution Frame ("IDF") to the OE. From there, the voice call is routed to the switch, which is connected to the Public Switched Telephone Network ("PSTN"), thereby allowing the call to route to its intended destination.

Q. PLEASE DESCRIBE HOW A TRADITIONAL VOICE CALL IS ROUTED FOR A CLEC/DLEC THAT HAS COLLOCATED WITHIN A CENTRAL OFFICE.

A. When a CLEC/DLEC is collocated, a voice call comes in to the central office from a home, business, or other outside location on a loop to the COSMIC or MDF, just as in the normal course. However, from the COSMIC or MDF, the call is either cross connected to an IDF and then routed to the CLEC/DLEC's collocation area, or it goes directly from the COSMIC or MDF to the CLEC/DLEC's collocation area. The equipment in the collocation area is then connected to the office equipment of the CLEC/DLEC.

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[1] COSMIC is a trademark of LUCENT Technologies

Q. PLEASE DESCRIBE HOW A VOICE AND DATA TRANSMISSION ROUTE THROUGH THE NETWORK IN A LINE SHARING ARRANGEMENT.

A. Line sharing introduces new, unique requirements upon all parties involved in this type of arrangement. New equipment, cross connects, systems, and other complexities are introduced into the network in order to route voice and data traffic separately in a line sharing environment.

Generally, in a line sharing arrangement, the loop comes in to the central office from a home, business, or some other outside location and connects to the COSMIC or MDF. From there, however, things begin to change. The loop then is cross connected and routed to an IDF, which, in turn, is cross connected and then routed to a "POTS splitter." The POTS splitter literally splits the voice and data traffic into two distinct transmissions, thereby allowing the voice and data traffic to be routed to Qwest and the data traffic to the CLEC/DLEC. The data traffic is then routed to the CLEC/DLEC collocation area. The voice traffic is routed back through the IDF, to the OE side of the COSMIC or MDF, and then to the Qwest switch

Q. PLEASE DESCRIBE THE PRIMARY PIECE OF EQUIPMENT THAT "SPLITS" THE VOICE AND DATA TRAFFIC.

A. As described above, this device is referred to as a POTS splitter; it resides at both the central office and end-user location. The POTS splitter allows the copper loop to be used for simultaneous voice and data transmission by different telecommunications carriers.

POTS splitters usually come in two configurations: (1) a single splitter version designed for mounting at the end-user premise; and (2) a multiple splitter version designed for mass termination at the central office.

A POTS splitter is a passive device, meaning it does not require power. POTS splitters have bays, each of which can contain eight shelves or panels. Each shelf typically can accommodate 64 shared lines; however, this will vary depending on the manufacturer of the POTS splitter. As stated, POTS splitters do not require external power to work, yet they still support lifeline services, such as 911, in the event of a power loss.

IV. NETWORK ARCHITECTURE

Q. WHAT IS THE PRINCIPAL DECISION REGARDING NETWORK ARCHITECTURE THAT MUST BE MADE TO IMPLEMENT LINE SHARING?

A. The principal decision regarding line sharing network architecture is where to place the POTS splitter within the central office. There generally are two alternatives: (1) placement of the splitter in a common area, either on the IDF or in a common splitter bay, so that all parties have ready access to the splitter; and (2) placement of the POTS splitter in the CLEC/DLEC's collocation area. Each alternative has unique costs, requirements, and benefits.

Q. DESCRIBE THE NETWORK ARCHITECTURE AND EQUIPMENT NEEDED TO PLACE THE POTS SPLITTER IN A COMMON AREA OF THE CENTRAL OFFICE.

A. When the POTS splitter is placed in a common area of the central office, the shared loop comes in to the central office from an end-user premise and connects to the COSMIC or MDF. The shared loop then is cross connected to an IDF which is, in turn, cross connected to a POTS splitter located in a common area. At the POTS splitter, the voice traffic is split from the data traffic, and the data traffic is routed back to an IDF where it is cross connected to a DSLAM located in the collocation area of the CLEC/DLEC. From there, the data traffic is routed to its intended destination over the CLEC/DLEC's network. The voice traffic also is routed from the POTS splitter back to an IDF, but, from there, it is cross connected back to the COSMIC or MDF. At the COSMIC or MDF, the voice traffic is cross connected to a switch for routing to its intended destination over the PSTN.

In this configuration, six cables, therefore, must be placed in the central office: (1) the first between the COSMIC or MDF and the IDF for both voice and data traffic; (2) the second between the IDF and the POTS splitter for both voice and data traffic; (3) the third between the POTS splitter and the IDF for data traffic; (4) the fourth between the IDF and the collocation area of the CLEC/DLEC for data traffic; (5) the fifth between the POTS splitter and the IDF for voice traffic; and (6) the sixth between the IDF and the COSMIC or MDF for voice traffic. Four cross connects, three termination blocks also are required, and space is required for placement of the POTS splitter. Most of the necessary cabling is not yet in place. Nor are the POTS splitters. Both facilities will require significant effort and cost to install. This architecture for line sharing is graphically depicted in Exhibit 1.

Using the architecture where the POTS splitter is placed in a common area, the CLEC/DLEC can purchase the POTS splitter or ask QWEST to purchase it subject to reimbursement. In either case, QWEST is responsible for installing the POTS splitter in the common area. Qwest also has responsibility for maintenance and repair of the POTS splitter. The CLEC/DLEC must make special arrangements for test access to the POTS splitter.

Q. DESCRIBE THE NETWORK ARCHITECTURE AND EQUIPMENT NEEDED TO PLACE THE POTS SPLITTER IN THE COLLOCATION AREA OF THE CLEC/DLEC.

A. Placement of the POTS splitter in the collocation area of the CLEC/DLEC is much less complicated as compared with placing the splitter in a common area of the central office, because it requires placing significantly less equipment in the central office and, hence, involves substantially less installation time. For this reason, this architecture results in shorter implementation time-frames and significantly less cost.

When the POTS splitter is placed in the collocation area of the CLEC/DLEC, the shared loop comes in to the central office from an end-user premise and connects to the COSMIC or MDF. The loop is then cross connected and routed to an IDF which, in turn, is cross connected and routed to a POTS splitter located in the CLEC/DLEC's collocation area. At the POTS splitter, the voice traffic is split from the data traffic, and the data traffic is routed through a DSLAM to its intended destination over the CLEC/DLEC's network. The voice traffic, on the other hand, is routed back to the COSMIC or MDF via an IDF. From the COSMIC or MDF, the voice traffic is cross connected to a switch for routing to its intended destination over the PSTN.

This architecture, therefore, requires placement of only four cables: (1) the first between the COSMIC or MDF and the ICDF; (2) the second from the ICDF to the POTS splitter for both voice and data traffic; (3) the third between the POTS splitter and the ICDF; and (4) the fourth to the COSMIC or MDF for voice traffic. Four cross connects and termination blocks also are required. Much of the cabling, however, already is in place in many central offices and will not require additional effort or cost to install. This architecture is graphically depicted in Exhibit 2.

Using the architecture in which the POTS splitter is located in the CLEC/DLEC's collocation area, the CLEC/DELC purchases and installs the POTS splitter within the collocation area, and it has responsibility for maintenance and repair of the splitter. With this architecture, therefore, the CLEC/DLEC has the ability to install its own test access devices and has complete control over acquisition and installation of the POTS splitters. This architecture affords the CLEC/DLEC the ability to control its relationship with its end-users, reducing reliance on Qwest. The use of this architecture should increase the speed to market of the CLEC/DLEC, thereby facilitating greater competition, and it could improve the end-user experience.

V. CROSS CONNECTS

Q. DOES THE FCC RECOGNIZE THAT QWEST CAN RECOVER COSTS ASSOCIATED WITH INSTALLING CROSS CONNECTS?

A. Yes. In the Line Sharing Order, the FCC stated at paragraph 145:

> "We would expect that the costs of installing cross connects for xDSL services in general would be the same as for cross connecting loops to the competitive LECs' collocated facilities, particularly where the splitter is located within the incumbent LEC's MDF. Accordingly, we find it reasonable to establish a presumption that, where the splitter is located within the incumbent LECs' MDF, the cost for a cross connect for entire loops and for the high frequency portion of loops should be the same. We would expect the states to examine carefully any assessment of costs for cross connections for xDSL services that are in excess of the costs of connecting loops to a competitive LECs' collocated facilities where the splitter is located within the MDF.

In making this statement, the FCC assumed that the splitter would be located "within" the ILECs' MDF or, presumably, the COSMIC. In most instances, the CLEC/DLEC has chosen a bay mounted type of splitter that will be located in close proximity to the ICDF. Thus, the alternative suggested by the FCC in the Line Sharing Order is implicated. With respect to this alternative, the FCC stated at paragraph 145 that:

> "If the splitter is not located within the incumbent LEC's MDF, however, then we would expect the states to allow the incumbent LEC to adjust the charge for cross connecting the competitive LEC's xDSL equipment to the incumbent LECs' facilities to reflect any cost differences arising from the different location of the splitter, compared to the MDF. We would expect that this amount would be only minimally higher than for cross connecting a splitter located within the MDF to the competitive LEC's xDSL equipment."

This is exactly what Qwest seeks to do here.

Q PLEASE DESCRIBE THE PLACEMENT AND NUMBER OF CROSS CONNECTS NECESSARY TO IMPLEMENT EACH NETWORK ARCHITECTURE (POTS SPLITTER IN COMMON AREA OR COLLOCATION SPACE) DESCRIBED ABOVE.

A. As described above, when the POTS splitter is placed in a common area, a total of four cross connects, as well as six cables and three termination blocks, are required to implement line sharing. By contrast, when the POTS splitter is placed in the collocation area of the CLEC/DLEC, four cross connects, as well as four cables and two termination blocks, are required. The cost of cross connects and related equipment, therefore, is significantly less when the POTS splitter is placed in the collocation area of the CLEC/DLEC.

VI. SPLITTERS

Q. PLEASE LIST THE TERMS AND CONDITIONS THAT QWEST AND THE CLEC/DLECs HAVE AGREED UPON FOR POTS SPLITTER COLLOCATION.

A. Qwest and the CLEC/DLECs spent a substantial amount of time prior to execution of the Line Sharing Stipulation discussing how to best implement line sharing. The following summary constitutes the agreement that was reached in the agreement vis-à-vis placement of the POTS splitter:

1. The CLEC/DLEC has the option to purchase the POTS splitter of its choice or to have Qwest purchase the splitter on its behalf. If Qwest purchases the POTS splitter on behalf of the CLEC/DLEC, the CLEC/DLEC must reimburse Qwest for the cost of the POTS splitter.
2. Regardless whether Qwest or the CLEC/DLEC purchases the POTS splitter, the POTS splitter selected will meet one of the following criteria:
    a. the POTS splitter must have been tested during Lab and Field Tests;
    b. the POTS splitter must meet the requirements for central office equipment collocation set by the FCC in its March 31, 1999 order in CC Docket No. 98-147.
3. Qwest will engineer one CLEC per panel minimum. A minimum of one shelf order increment per CLEC is required based on splitter specifications. A bay will house up to eight shelves of splitters. By ordering a shelf at a time, a bay will accommodate more than one CLEC.
4. Qwest will install and maintain the POTS splitters.
5. The CLEC/DLEC will lease the POTS splitter to Qwest at no cost.

6. Qwest will engineer and install the POTS splitter in close proximity to an IDF to allow for shorter cables between the IDF and POTS splitter.
7. The CLEC/DLEC has the option of purchasing the requisite cabling for itself, provided the cable is given to Qwest for installation, or it may ask Qwest to purchase the cabling.
8. Cables on the Qwest side of the IDF will be Shielded Category 3 cables to reduce the possibility of spectrum interference.
9. Qwest will provide the CLEC/DLEC with Carrier Facility Assignment ("CFA") 15 days prior to the Ready For Service ("RFS") date of the POTS splitter.
10. Qwest may co-mingle several CLEC/DLEC POTS splitters in a single bay in order to maximize space availability.
11. The CLEC/DLEC may choose to utilize existing cables that run from its collocation area to the IDF to support line sharing arrangements. This will reduce the time and cost to implement line sharing.
12. Qwest must engineer and install cable from: (1) the POTS splitter to the COSMIC or MDF for voice traffic; (2) the COSMIC or MDF to the POTS splitter for both voice and data traffic; and (3) the POTS splitter to the IDF for data traffic. Some of this cabling may already be in place in many central offices.
13. To expedite line sharing provisioning, Qwest has agreed to administer all cross connects.
14. The CLEC/DLEC will provide Qwest with cross connect information, CFA, on its side of the IDF to enable Qwest to perform the cross connects.

15. The test point access for the CLEC/DLEC will be at the DMARC point on the POTS splitter. The DMARC is the data cable from the POTS splitter back to the IDF.

Q. IF THE POTS SPLITTER IS TO BE PLACED IN A COMMON AREA OF THE CENTRAL OFFICE, HOW DOES A CLEC/DLEC REQUEST POTS SPLITTER PLACEMENT?

A. To initiate POTS splitter placement, the CLEC/DLEC must submit an application form to Qwest requesting line sharing. The CLEC/DLEC must provide the following standard information to Qwest on the application form:

1. The identity of the party that will provide the requisite cable and POTS splitter(s).
2. The manufacturer name and serial number for the POTS splitter(s).
3. The number of POTS splitters to be placed in the central office.
4. The CLEC/DLEC's forecasted line sharing requirements.
5. The CLEC/DLEC's shelf requirements for the POTS splitter(s).
6. The CLEC/DLEC's cable requirements, whether they be new or existing cables, to support the POTS splitter placement. If the CLEC/DLEC intends to reuse cables, the CLEC/DLEC must identify the intended cable pairs and their CFA assignments, as well as whether it wants the cable to be shielded.
7. Any special cable requirements.

If placement of the splitter collocation is feasible in the subject central office, Qwest prepares a quote showing the charge for the placement. Before Qwest will begin installation of the POTS splitter, the CLEC/DLEC must pay 100 percent of the quote in advance.

Obviously, the CLEC/DLEC will not need to submit an application for POTS splitter collocation in central offices where the POTS splitter will be placed in its collocation area. If the CLEC/DLEC needs additional collocation space to accommodate placement of a POTS splitter, it will have to submit a standard collocation request.

VII. THE WORK NEEDED TO COMPLETE SPLITTER COLLOCATION

Q. PLEASE DESCRIBE THE PRELIMINARY ENGINEERING THAT QWEST MUST PERFORM FOR SPLITTER COLLOCATION, AND STATE THE AMOUNT OF TIME THAT IS REQUIRED TO COMPLETE THIS WORK.

A. When Qwest receives a request for splitter collocation, it must begin the job by having an in-house "detail engineer" retrieve from a database detailed drawings of the central office where the collocation has been requested. These drawings identify where equipment is located in the central office, including, for example, cable racking that may be used for splitter collocation. The drawings also indicate the type of equipment that is in a central office. For example, the drawings show the type of bay equipment in a central office. The detail engineer looks at the type of bay equipment to determine if extenders may be needed to carry out the splitter collocation. After retrieving the drawings, the detail engineer determines whether there are any ongoing construction or engineering jobs at the central office that should be included in the drawings. If there are jobs that are in progress, the detail engineer marks up the drawings to reflect these jobs and their location within the central office. It is essential to reflect any ongoing jobs in the central office, as those jobs may affect the configuration of the splitter collocation.

My discussions with the detail engineers who have worked on the splitter collocations within Qwest's territory establish that the preliminary engineering process requires, on average, about two hours to complete. Based on my experience, this is an appropriate amount of time to complete this step.

Q. PLEASE DESCRIBE THE WALK-THROUGH OR FIELD SURVEY THAT AN ENGINEER MUST CONDUCT FOR SPLITTER COLLOCATION.

A. After making any necessary changes to the drawings, the detail engineer provides them to a field engineer who must then conduct a walk-through or field survey at the central office. The field survey serves two important purposes. First, the survey is necessary to permit a comparison of the drawings to the actual configuration of the central office. Because of the rapid pace of growth and changes in Qwest's central offices, Qwest engineers must conduct this type of comparison every time a CLEC submits a collocation request.

Second, a field survey is needed to ensure that the space designated for the splitter collocation is adequate. This evaluation requires several steps on the part of the field engineer. For example, the field engineer must conduct a load assessment to ensure that the weight-bearing capacities of the floor and ceiling where the collocation is occurring meet the requirements of OSHA and NEBS. This evaluation requires the engineer to coordinate with other Qwest employees in the real estate group who have information about the weight-bearing capacity of the property. The engineer also must take detailed cable measurements, identify the routing paths for the cables that will be used in the collocation, and determine whether any additional cable racking will be needed for the job.

My discussions with the field engineers who have performed the actual field surveys for splitter collocation establish that this process requires, on average, about five hours to complete. This total does not include the travel time that generally is an unavoidable part of the field survey process.

Q. AFTER COMPLETING THE PRELIMINARY ENGINEERING FOR SPLITTER COLLOCATION, MUST QWEST ENGINEERS PERFORM THE ACTUAL ENGINEERING FOR THE JOB?

A. Yes. Preliminary engineering refers to the planning that is necessary for every collocation job. The engineering phase involves the preparation of the detailed work prints and project management of the construction job. These phases are separate from each other, and each phase is necessary for every request for splitter collocation that Qwest receives from a CLEC.

Q. PLEASE DESCRIBE THE ENGINEERING THAT QWEST MUST PERFORM FOR SPLITTER COLLOCATION, AND STATE THE AMOUNT OF TIME THAT IS REQUIRED TO COMPLETE THIS WORK.

A. Upon completing the field survey, the field engineer returns the drawings of the central office to the detail engineer. The detail engineer adds any markings to the drawings that are needed as a result of the field survey and then enters the new drawings into the database. In many cases, because of this new job, the drawings must be changed to reflect the locations of the cable placement, bays, cable racking, frames, floor bracings, and ceiling bracings. The detail engineer then orders the equipment needed for the splitter collocation job based on the drawings that are in the database. After ordering the equipment, the detail engineer is responsible for tracking the shipping and delivery of the equipment.

As part of the engineering of splitter collocation, a detail engineer must complete database forms to lay out the circuit count and configurations for the customer. The configurations specific to each customer are built into the switch database to facilitate order processing.

After inputting the information into the switch, the detail engineer must complete the engineering of the job. This part of the process requires the engineer, first, to confirm receipt of the equipment and materials needed to complete the splitter collocation. The engineer must then "engineer" each circuit, which requires making virtual connections for each circuit through the data base. If a customer orders 200 DSOs, for example, the detail engineer must establish 200 virtual connections in the database.

The engineering phase of splitter collocation requires, on average, about eight hours to complete, as established by the detail engineers, in various work groups, who have performed the actual splitter collocations in our central offices.

Q. WHAT IS THE FINAL PHASE OF WORK THAT QWEST MUST PERFORM FOR SPLITTER COLLOCATION?

A The final phase involves verifying that the job has been engineered properly and completing the paper work associated with the job. As part of this process, the detail engineer must verify that all circuits have been properly assigned and that the cable and hardware have been properly placed. The engineer also must verify that the circuits have been transferred from the TIRKS Database and established in the SWITCH Database. The detail engineer also must fill out Excel spread sheets that set forth the location of the splitter and the cable counts. These forms are provided to the CLECs and are essential to allow the CLECs to place their orders for line sharing.

The experience of the detail engineers who have carried out the splitter collocations have established that this final phase of the process requires, on average, approximately seven hours to complete.

Q. BASED ON THE DESCRIPTIONS OF WORK YOU HAVE PROVIDED, HOW MANY HOURS ARE YOU RECOMMENDING BE INCLUDED IN A COST STUDY FOR SPLITTER COLLOCATION?

A. As my description of splitter collocation demonstrates, the average amount of time required to complete this type of collocation is approximately 22 hours; two hours for preliminary engineering; five hours for a field survey; eight hours for engineering; and seven hours for job verification and completion of job forms and paper work. Accordingly, I have recommended that the cost study use 20 hours as a reasonable, conservative estimate of the amount of time that Qwest must invest to complete a splitter collocation.

Q. CAN YOU PLEASE OUTLINE THE STEPS NECESSARY TO INSTALL A SPLITTER SHELF INTO AN EXISTING RELAY RACK?

A. Yes. The actual installation of a splitter shelf requires numerous activities. First, the installation department must inventory all of the equipment that is required for the splitter installation. Second, all of the auxiliary framing and associated framework and relay racks must be placed. This activity requires the framework to be drilled, mounted and secured to the overhead structure and the floor. Third, an installer must unpack the splitter shelf and mount it into the relay rack. The splitter shelf is secured in the relay rack by mounting screws. Fourth, an installer must install the appropriate number of connecting blocks on the MDF or the COSMIC frame. Fifth, an installer must run cable from the connecting blocks vertically, up to the ladder rack and then the cable is routed through the central office to the relay rack that houses the splitter shelf. The cable has to be secured to the relay rack and at all locations where the cable is loose and could be torn away from the connections. Sixth, an installer must terminate the cable at the connecting blocks. Before the cable can be terminated, each individual wire has to be stripped of insulation and spread apart from the binder groups. Next, the individual wires have to be wrapped down on the block one at a time. Seventh, the cable must be connected to the splitter shelf. Eighth, it is necessary to conduct a continuity test to ensure that there is a continuous connection between the splitter shelf and the connecting block. Ninth, the connecting blocks, splitter shelves and relay racks are stenciled. Finally, an installer must mark all drawings to reflect the changes in the central office, update existing records, and provide the updated records to the appropriate parties.

VIII. USE OF COSMIC FRAMES

Q. IS IT A CORRECT ASSUMPTION THAT ONLY MDFs WILL BE UTILIZED AND COSMIC FRAMES WILL NOT BE USED?

A. No, real-world central offices include both MDFs and COSMIC frames. Qwest, (formerly known as QWEST), has been using MDFs in its central offices for decades and has been using COSMIC frames for the past 25 years. COSMIC frames, however similar to the MDF's, utilize the short jumper concept to provide a cross connect point in a digital environment. Because they are smaller than MDFs, COSMIC frames allow Qwest to save space and, in turn, money in its central offices. These frames allow for single-sided jumper operations as contrasted with MDFs that utilize the traditional double-sided arrangement. The space that Qwest saves through the use of COSMIC frames reduces, for example, the building costs that Qwest incurs. Without these frames, Qwest's overall operational costs would be higher.

Q. WILL THE USE OF AN INTERMEDIATE FRAME BE REQUIRED?

A. Yes, some counterparts assume that a 100 pair tie cable will be placed from the splitter location to the MDF or COSMIC frame for voice and then one for voice and data, and also, a 100 pair tie cable from the splitter to the collocation area to carry data. But what is failed to be mentioned is that, in a 96 line splitter, there are 12, 25 pair cables that must be connected into the back of the splitter. In this arrangement, there are 4 cables that carry data, and 4 cables that carry voice, and then 4 cables that carry voice and data. These 12 cables must "physically" connect to the 3, 100 pair tie cables that connect to the collocation area and the MDF or COSMIC frame. Therefore, either an IDF or ICDF is "physically" needed to make the transition from the cables that plug into the splitter to the tie cables.

IX. THE AMOUNT OF LADDER RACK REQUIRED FOR SPLITTER COLLOCATION

Q. HOW MUCH LADDER RACK IS REQUIRED TO PROVIDE SPLITTER COLLOCATION?

A. Ladder rack is used in Qwest's central offices to place and secure the cables that are routed from the relay racks. The ladder rack is located above the relay racks, which houses different types of equipment. Qwest has conducted a survey in which line sharing has been installed. This survey establishes that the average length from the main frame to the splitter location is 104 feet. Based on the results of this survey, I have recommended that we assume an average length of 100 feet. This assumption, based on actual lengths in the central offices studied, accurately represents the costs Qwest will incur.

X. CONFIGURATION OF RELAY RACKS

Q. HOW SHOULD A RELAY RACK BE CONFIGURED TO HOLD SPLITTER SHELVES.?

A. While a relay rack can hold up to 14 splitter shelves, Qwest recommends a 60 percent fill rate for each relay rack, which is eight splitter shelves per relay rack. Again, this figure is a conservative assumption supported by what is actually occurring in Qwest's central offices today. In Qwest's offices surveyed, where splitters have been installed, demonstrates that there is currently an average of only three splitter shelves per relay rack. In addition, there is substantial evidence indicating that line sharing will be shortlived technology, and that, therefore, there will never be high utilization of relay racks. For example, there has been much recent discussion in the industry about the emergence of Voice Over IP as a broad-based technology. In my view, technologies of this type limit the foreseeable life of line sharing.

XI. CONCLUSION

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes

BEFORE THE ARIZONA CORPORATION COMMISSION

CARL J. KUNASEK
CHAIRMAN
JIM IRVIN
COMMISSIONER
WILLIAM A. MUNDELL
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	**DOCKET NO. T-00000A-00-0194**

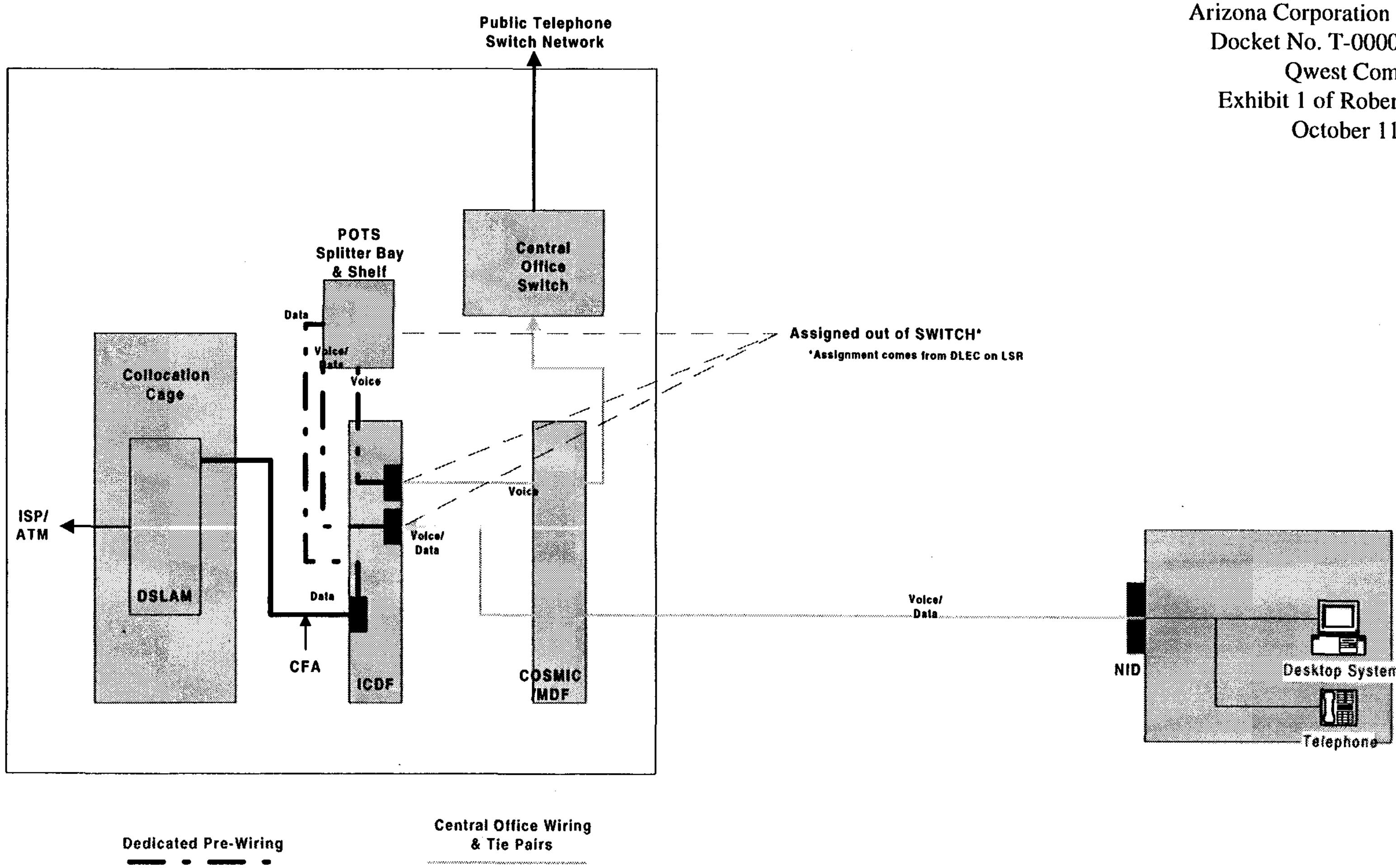
EXHIBITS OF

ROBERT J. HUBBARD

QWEST CORPORATION

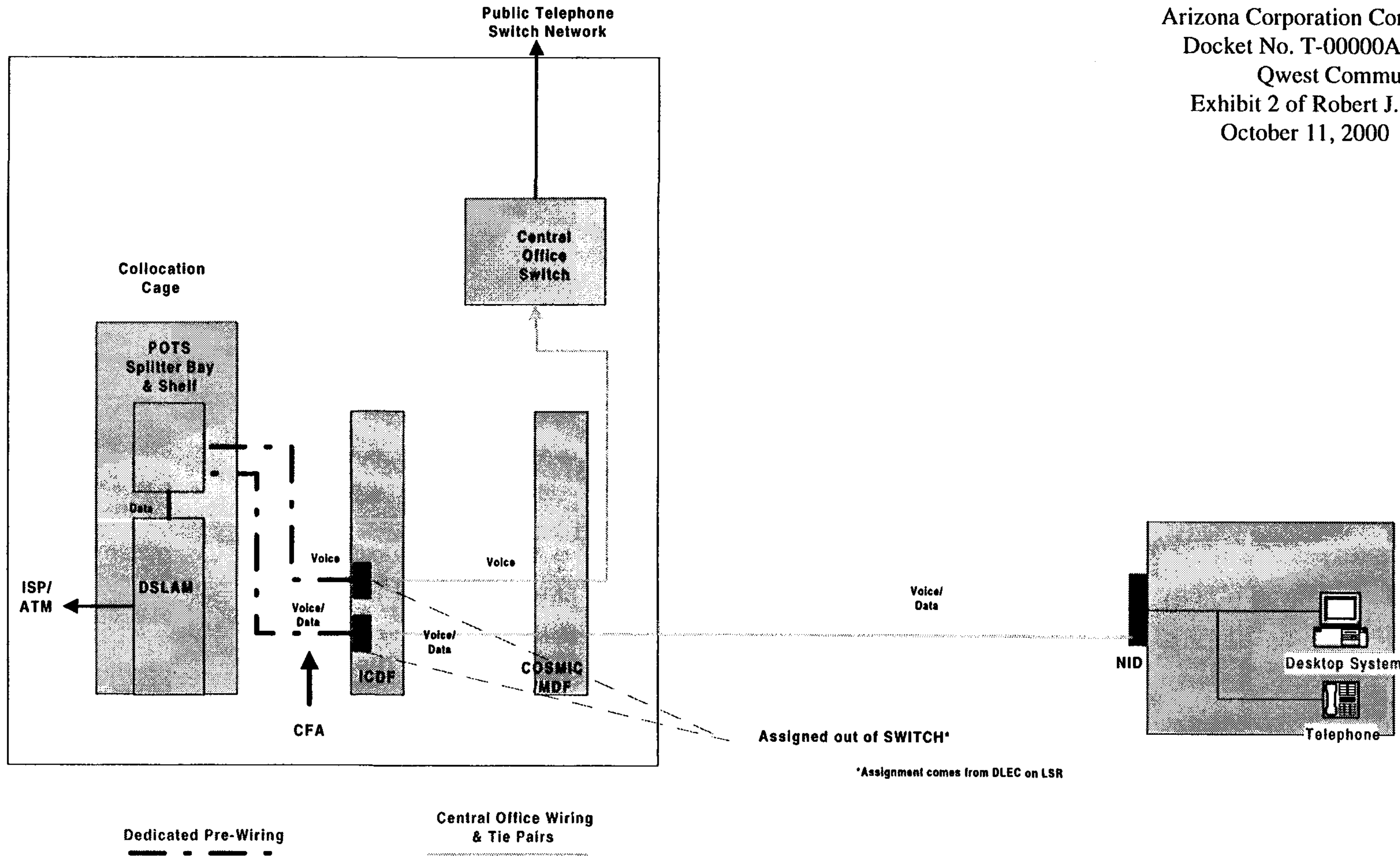
OCTOBER 11 , 2000

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Communications
Exhibit 1 of Robert J. Hubbard
October 11, 2000



Shared Loop (DLEC-Owned POTS Splitter resides outside Cage)

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Communications
Exhibit 2 of Robert J. Hubbard
October 11, 2000



Shared Loop (POTS Splitter resides inside Cage)

BEFORE THE ARIZONA CORPORATION COMMISSION

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS)	**DOCKET NO. T-00000A-00-0194** **AFFIDAVIT OF ROBERT J. HUBBARD**

STATE OF COLORADO)

COUNTY OF ARAPAHOE)

Robert J. Hubbard, of lawful age being first duly sworn, depose and states:

1. My name is Robert J. Hubbard. I am a Member of Technical Staff in Qwest's Interconnection Planning Department. I have caused to be filed written testimony and exhibits in support of USWC in Docket No. T-00000A-00-0194.

2. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge and belief.

Further affiant sayeth not.

Robert J. Hubbard

Robert J. Hubbard

SUBSCRIBED AND SWORN to before me this 9th day of October, 2000.

Donna Goldman

Notary Public residing at Littleton, Colorado.

My Commission Expires: 4/5/04

DONNA GOLDMAN
STATE OF COLORADO
NOTARY PUBLIC

BEFORE THE ARIZONA CORPORATION COMMISSION

CARL J. KUNASEK
CHAIRMAN
JIM IRVIN
COMMISSIONER
WILLIAM A. MUNDELL
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS.]]]]]]	**DOCKET NO. T-00000A-00-0194**

TESTIMONY OF

TERESA K. MILLION

ON BEHALF OF

QWEST CORPORATION

OCTOBER 11, 2000

TESTIMONY INDEX

EXECUTIVE SUMMARY

Purpose of Testimony

The purpose of my testimony is to present Qwest's Arizona recurring and nonrecurring cost data for interconnection service and unbundled network elements (UNEs). These data are utilized as a basis for the pricing recommendations contained in the testimonies of Mr. Perry Hooks Jr. and Mr. Robert Kennedy. My testimony also demonstrates that Qwest's Total Element Long Run Incremental Cost (TELRIC) studies follow proper economic costing principles. Additionally, my testimony describes Qwest's proposal for Collocation, UNE Deaveraging and Line Sharing, and addresses several important cost methodology issues.

TELRIC Principles

The Qwest TELRIC studies identify the *forward-looking* direct costs that are caused by the provision of an interconnection service or network element in the *long run*, plus the incremental cost of shared facilities and operations. These studies identify *total element* costs—the average incremental cost of providing the entire quantity of the element. The assumptions, methods, and procedures used in Qwest cost studies are designed to yield the forward-looking *replacement* costs of reproducing the telecommunications network, considering the most efficient *least cost* technologies.

A TELRIC study must provide a realistic estimate of forward-looking costs which allows UNE prices to be set at just and reasonable levels sufficient to recover the actual cost of providing those elements. Thus, a TELRIC study must provide an estimate of the *actual* forward-looking costs that Qwest *would be likely to incur* in the future. The Qwest TELRIC studies focus on the latest technologies and methods of operations that are currently available to Qwest.

In addition, the studies are in compliance with the Telecommunications Act of 1996, and are consistent with the FCC's TELRIC principles, as defined in the FCC's First Interconnection Order.

The Qwest TELRIC Studies

In this docket, Qwest will sponsor recurring and nonrecurring costs for UNEs resulting from the UNE Remand Order, Customer Transfer Charge, Line Sharing, Collocation and UNE Loop Deaveraging. Thus, my testimony presents cost studies for the following elements:

- UNE Platform
- DS1 and DS3 Capable Loops
- Subloop, including DS1 Capable Feeder Loop

- Unbundled Dark Fiber
- Shared Transport
- Customer Transfer Charge
- Channel Regeneration
- Line Sharing
- Collocation, including CLEC to CLEC Connections
- UNE Deaveraging

Conclusion

The Commission should set prices for unbundled network elements based on the TELRIC data summarized in the TELRIC Cost Summary Exhibits to my testimony. The Qwest TELRIC studies reflect the proper application of the FCC's TELRIC principles. In addition, the Commission should adopt the geographic deaveraging plan proposed by Qwest, which is also consistent with FCC rules and the Commission's prior determinations in Phase I of this proceeding.

I. IDENTIFICATION OF WITNESS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS AND POSITION WITH QWEST CORPORATION.

A. My name is Teresa K. (Terri) Million. My business address is 1801 California Street, Room 4450, Denver, Colorado 80202. I am employed by Qwest Corporation as a Director, Service Costs in the Policy and Law Department. In this position, I am responsible for preparing testimony and testifying about Qwest's cost studies in a variety of regulatory proceedings.

Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS PROCEEDING?

A. Yes. On April 24, 2000 I filed direct testimony in Phase I of this proceeding.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to present Total Element Long Run Incremental Cost (TELRIC) data in support of each of the rates for the unbundled network elements (UNEs) and interconnection being addressed in Phase II of this docket, for which rates have not previously been established. In particular, I present TELRIC studies for High Capacity Loops (i.e., DS1 and DS3 capable), DS1 Capable Feeder Loops, Shared Transport, Dark Fiber, Line Sharing, including Operations Support Systems (OSS), Collocation, Geographic Deaveraging for

UNE Loops, and Customer Transfer Charges. This data forms the basis for recurring and nonrecurring costs for these UNEs. My testimony will also demonstrate that Qwest's TELRIC studies follow proper economic costing principles.

Q. ARE OTHER QWEST WITNESSES PROVIDING TESTIMONY REGARDING THESE UNES?

A. Yes. My testimony is part of Qwest's support for UNEs and interconnection services in this proceeding. Other witnesses include: Mr. Perry Hooks, Jr. and Mr. Robert Kennedy who provide testimony describing in detail certain UNEs and interconnection services under consideration in this docket; Mr. Jeff Hubbard provides testimony discussing network aspects of various interconnection services and UNEs; Dr. William Fitzsimmons and Ms. Renee Albersheim provide testimony regarding Line Sharing; and, Mr. Larry Brotherson and Dr. William Taylor provide testimony regarding Inter-carrier compensation.

III. TELRIC PRINCIPLES

A. Summary of TELRIC Principles

Q. PLEASE SUMMARIZE THE OVERALL ECONOMIC PRINCIPLES THAT ARE APPLIED IN QWEST'S TELRIC STUDIES.

A. The Qwest TELRIC studies identify the *forward-looking* direct costs that are caused by the provision of an interconnection service or network element in the *long run*, plus the incremental cost of shared facilities and operations. These studies identify *total element* costs—the average incremental cost of providing the entire quantity of the element. The assumptions, methods, and procedures used in Qwest cost studies are designed to yield the forward-looking *replacement* costs of reproducing the telecommunications network, considering the most efficient *least cost* technologies.

Q. HOW IS THE CONCEPT OF LONG RUN CONSIDERED IN THE QWEST TELRIC STUDIES?

A. The Qwest TELRIC studies consider a time period over which all inputs are variable.[1] In this context, long run does not relate to a specific period of time (e.g., five years, ten years, etc.) but refers to a time period long enough that all inputs, including investments, are variable. From a practical standpoint, this means that in a long run study all investments related to the network element are considered variable, and the costs associated with these investments are included in the TELRIC study results.

Q. PLEASE EXPLAIN HOW THE TELRIC STUDIES IDENTIFY REPLACEMENT COSTS FOR THE TOTAL ELEMENT.

A. The Qwest TELRIC studies consider the costs of a network that is "built from scratch," assuming the existing location of network "nodes" or switches. These long run studies identify the total "replacement" costs of serving all current and

[1] First Report and Order, CC Docket No. 96-98, CC Docket No. 95-185, (Rel. August 6, 1996), at ¶ 692.

anticipated demand, rather than the costs of adding equipment to an existing network to meet a small increment in demand. Thus, the studies consider the efficiencies associated with building a network to serve total demand, assuming a single carrier.

In the Qwest TELRIC studies, the increment studied is the total quantity of the network element. Therefore, the studies calculate the average cost for all units of output, rather than the marginal cost of the next or last unit of output.

Q. PLEASE EXPLAIN HOW THE <u>FORWARD-LOOKING, LEAST COST</u> CONCEPT IS CONSIDERED IN THE QWEST TELRIC STUDIES.

A. The Qwest TELRIC studies identify the forward-looking costs that are likely to be incurred in the future. These studies consider the least cost forward-looking technologies and methods of operations that are currently available.

Q. IS IT IMPORTANT THAT TELRIC STUDIES CONTAIN REALISTIC FORWARD-LOOKING ASSUMPTIONS?

A. Yes. A TELRIC study must provide a realistic estimate of forward-looking costs. Thus, a TELRIC study must provide an estimate of the *actual* forward-looking costs that Qwest *would be likely to incur* in the future. Consistent with decision No. 96-3321 of the Eighth Circuit Court of Appeals,[2] the Qwest TELRIC studies focus on the latest technologies and methods of operations that are currently

[2] *Iowa Utilities Board, et al., Petitioners, v. Federal Communications Commission and the United States of America, Respondents, On Petitions for Review of an Order of the Federal Communications Commission.*

available to Qwest and not on imaginary, hypothetical networks. Although, aware that the decision of the Eighth Circuit has been recently stayed, Qwest continues to believe that only technologies that are commercially available and that are *actually* deployed in the industry today should be included in the studies. Theoretical future technologies are not considered because it is impossible to know how much such theoretical technologies will cost and how they will be configured if in fact they are ever commercially available.

Some parties may advocate an extremely hypothetical least-cost TELRIC methodology, based on unrealistic assumptions, in order to produce low cost estimates. The Commission should not accept such "imaginary cost" estimates, because pricing based on these studies would be inconsistent with an "actual" cost standard, and would assure that Qwest would never be able to recover its costs. No firm can continue to invest in its infrastructure if it is forced to sell its services based on "imaginary" costs that are below the actual costs incurred to build the infrastructure.

In the Qwest TELRIC studies, current market prices are used to determine the costs for equipment and materials. Placement costs are based on the expenditures that the network organization currently incurs to perform the relevant functions, based on actual contracts with vendors that do work for Qwest in Arizona. Expense factors are based on currently incurred costs adjusted for known or anticipated changes. Each assumption is designed to reflect the actual forward-looking cost of placing the network.

Q. CAN YOU PROVIDE SOME EXAMPLES OF HOW APPROPRIATE FORWARD-LOOKING TECHNOLOGIES ARE CONSIDERED IN QWEST'S TELRIC STUDIES?

A. Yes. In the Transport Model, interoffice facilities are modeled assuming 100% fiber and SONET based equipment. The Qwest TELRIC studies also consider forward-looking operating expenses. Qwest trends and adjusts its historical information to develop annual cost factors that estimate forward-looking costs. Using historical information as a starting point, Qwest adjusts its expense factors to account for future efficiencies and expected inflationary/deflationary price impacts.[3]

[3] This is accomplished via the "estimated cost savings" and "inflation" inputs which can be viewed in the Expense Factor Module of the Collocation Model.

Q. YOU MENTIONED THAT TELRIC STUDIES IDENTIFY DIRECT COSTS AND THE COST OF SHARED FACILITIES AND OPERATIONS. PLEASE DEFINE EACH OF THESE TERMS.

A. Direct costs are the costs that would be avoided if the network element or service were not offered. Direct costs include both volume sensitive costs (i.e., costs that vary with the volume of a network element or service) and volume-insensitive costs (i.e., costs that are caused by a network element or service, but do not vary with volume). Shared costs are the costs that are caused by the provision of a group of services. Both direct and shared costs are included in a TELRIC study, consistent with the TELRIC definition provided by the FCC in the First Report and Order.[4]

Q. DO THE QWEST TELRIC STUDIES IDENTIFY COMMON COSTS?

A. Yes. As discussed above, Qwest's studies identify the TELRIC for each element, which includes the direct and shared costs. In addition, these studies separately identify an allocation of forward-looking common overhead costs. These costs (e.g., legal, planning, executive, etc) are not associated with a specific network

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[4] At paragraph 682 of the First Report and Order, the FCC stated "We conclude that, under a TELRIC methodology, incumbent LECs' prices for interconnection and unbundled network elements shall recover the forward-looking costs directly attributable to the specified element, as well as a reasonable allocation of forward-looking common costs. . . . Directly attributable forward-looking costs include the incremental costs of facilities and operations that are dedicated to the element. Such costs typically include the investment costs and expenses related to primary plant used to provide that element. Directly attributable forward-looking costs also include the incremental costs of shared facilities and operations. Those costs shall be attributed to specific elements to the greatest extent possible. For example, the costs of conduits shared by both transport and local loops, and the costs of central office facilities shared by both local switching and tandem switching, shall be attributed to specific elements in reasonable proportions. More broadly, certain shared costs that have conventionally been treated as common costs (or overheads) shall be attributed directly to the individual elements to the greatest extent possible."

element, but represent general costs of doing business. These are *real* costs that Qwest will efficiently incur on a forward-looking basis, and that must be recovered in UNE prices. In fact, the FCC's First Report and Order states specifically that "under a TELRIC methodology, incumbent LECs' prices for interconnection and unbundled network elements shall recover the forward-looking costs directly attributable to the specified element, as well as a reasonable allocation of forward-looking common costs."[5]

Q. HOW SHOULD THE QWEST TELRIC STUDIES BE UTILIZED IN THIS PROCEEDING?

A. The TELRIC data presented in my testimony should be utilized in setting interconnection and unbundled network element (UNE) prices. That is, this data, including an allocation of common costs, should be used as the basis for the recurring and nonrecurring UNE and interconnection service prices presented in the testimony of Mr. Hooks and Mr. Kennedy.

[5] First Report and Order at ¶ 682.

B. THE TELECOMMUNICATIONS ACT AND FCC ORDER

Q. WHAT DOES THE TELECOMMUNICATIONS ACT OF 1996 SAY ABOUT COSTS AND PRICES?

A. The Telecommunications Act states that prices for network elements shall be "nondiscriminatory," "based on costs" and "may include a reasonable profit".[6]

Q. IS QWEST'S TELRIC METHODOLOGY IN COMPLIANCE WITH THE TELECOMMUNICATIONS ACT?

A. Yes. Qwest's TELRIC studies are in compliance with the Telecommunications Act of 1996.

Q. DID THE FCC ESTABLISH COSTING AND PRICING RULES IN ITS FIRST REPORT AND ORDER?

A. Yes. The FCC proposed costing and pricing rules in its First Report and Order, released on August 8, 1996. In these rules, the FCC established overall TELRIC principles and specified a TELRIC methodology.

Q. DO QWEST'S TELRIC STUDIES FOLLOW A METHODOLOGY THAT IS CONSISTENT WITH THE FCC'S TELRIC RULES?

A. Yes. The Arizona TELRIC data filed by Qwest in this proceeding are consistent with the FCC's TELRIC principles, as defined in the FCC's First Report and Order. For example, the TELRIC studies are consistent with the following

[6] 47 USC §252(d)(1).

principles:

- "Under a TELRIC methodology, incumbent LECs' prices for interconnection and unbundled network elements shall recover the forward-looking costs directly attributable to the specified element, as well as a reasonable allocation of forward-looking common costs." (¶682)

- "Per-unit costs shall be derived from total costs using reasonably accurate "fill factors" (estimates of the proportion of a facility that will be "filled" with network usage); that is, the per-unit costs associated with a particular element must be derived by dividing the total cost associated with the element by a reasonable projection of the actual total usage of the element." (¶682)

- "Directly attributable . . . costs shall be attributed to specific elements to the greatest extent possible. . . . More broadly, certain shared costs that have conventionally been treated as common costs (or overheads) shall be attributed directly to the individual elements to the greatest extent possible." (¶682)

- "The forward-looking pricing methodology for interconnection and unbundled network elements should be based on costs that assume that wire centers will be placed at the incumbent LEC's current wire center locations, but that the reconstructed local network will employ the most efficient technology for reasonably foreseeable capacity requirements." (¶ 685)

- "In a TELRIC methodology, the "long run" used shall be a period long enough that all costs are treated as variable and avoidable." (¶ 692)

- "An appropriate calculation of TELRIC will include a depreciation rate that reflects the true changes in economic value of an asset and a cost of capital that appropriately reflects the risks incurred by an investor." (¶ 703)

IV. THE QWEST TELRIC STUDIES

A. The TELRIC Studies in General

Q. YOU SAID THAT THE TELRIC DATA FORMS THE BASIS FOR RECURRING AND NONRECURRING COSTS. PLEASE DEFINE THESE COSTS.

A. Recurring costs are the ongoing costs associated with providing a service or network element. Recurring costs are generally investment-related and include both capital costs and operating expenses. These costs are often presented as a cost per month or per unit of usage (e.g., minute of use) and are incurred throughout the time-period the service or network element is provided to a customer.

Nonrecurring costs are the one-time costs associated with establishing a service or network element. Nonrecurring costs are generally activity or transaction-related and are calculated by multiplying the length of time necessary to perform an activity by a specified labor rate.

Q. PLEASE EXPLAIN HOW RECURRING COSTS ARE CALCULATED IN THE TELRIC STUDIES PRESENTED IN ARIZONA.

A. All Qwest cost studies in Arizona employ the same basic procedures to arrive at a monthly recurring TELRIC cost estimate:

1. Define the Network Element or Service. The cost analyst works with product management and technical staff to define the element or service to be studied. This step includes identification of all the network components that are needed to provide the element or service, and an estimation of demand for the element or service.

2. Development of Investment. The investment required to provide the service or element includes the actual vendor prices for material and equipment, plus the cost to place the equipment, including capitalized labor costs. Determination of the correct amount of investment is key to the accuracy of any predictive cost model. Therefore, in addition to utilizing actual vendor information, and contractor or internal placement costs, Qwest relies on

sound engineering practices to model the amount of investment necessary to provide a given service at a particular level of usage or demand.

3. Estimation of Investment-related Capital Costs. Capital costs comprise a large portion of total service cost, and the level of capital cost is impacted by the depreciation lives for the relevant plant accounts and the weighted cost of debt and equity capital. Investment-related capital costs (depreciation, cost of money, income tax) in Arizona are based on Commission decisions. For example, the cost of money used by Qwest in its Arizona TELRIC studies is 10.37%.[7] The depreciation rates are based on the depreciation study performed by Technology Futures, Inc. (TFI) as allowed by the Commission in the previous cost docket.[8]

4. Estimation of Operating Costs. Operating expenses are estimated, in most cases, utilizing annual cost factors. Investment-related operating expenses (e.g., maintenance expense) are calculated based on annual cost factors that are applied to investment, while other operating expenses (e.g., marketing expenses) are normally calculated based on factors that are applied to the investment-related costs. These cost factors consider the historic relationships between expenses and investment that the Company has experienced in the past, adjusted for inflation/deflation and productivity

[7] Docket No. U-3021-96-448 ET AL., Decision 60635, p. 8.
[8] Docket No. U-3021-96-448 ET AL., Decision 60635, p. 10.

increases. These operating expenses are added to the capital costs to provide the TELRIC for the network element.

An appropriate share of common costs is allocated to the TELRIC costs to yield the total cost (TELRIC plus Common).

5. Validation of Results. After costs have been estimated, this data is reviewed and cross-checked with other cost data to assure reasonableness. Results are compared across states and across services. TELRIC results may also be compared with cost results derived from other cost models.

Q. HOW DOES THE DEVELOPMENT OF NONRECURRING COSTS DIFFER FROM DEVELOPMENT OF RECURRING COSTS?

A. Nonrecurring costs are generally expense based, and result from the development of direct costs associated with the tasks necessary to perform a one-time activity. Similar to the process described above, the tasks associated with establishing a particular service or element are identified by product management. Time required to perform tasks are modeled and multiplied by appropriate labor rates to develop the direct costs of the activity. Operating expenses are added to the direct expenses to provide the TELRIC for the network element. Finally, a share of common costs is applied to produce TELRIC plus Common nonrecurring costs.

Q. PLEASE BRIEFLY DESCRIBE THE TELRIC STUDIES THAT QWEST IS SPONSORING IN PHASE II OF THIS DOCKET.

A. In this phase of the docket, I am sponsoring the recurring and nonrecurring costs for interconnection service and several UNEs, including new UNEs that resulted from the FCC's UNE Remand Order. My testimony presents cost studies for the following elements:

- UNE Platform;
- Subloop Unbundling – includes remaining issues not addressed by the Commission, i.e., subloop deaveraging and DS1 capable feeder loops;
- High Capacity Loops – includes DS1 and DS3 capable loops;
- Dark Fiber – includes fiber in both the loop and interoffice dedicated transport;
- Shared Transport;
- Channel Regeneration;
- Customer Transfer Charge;
- Line Sharing – includes OSS and Collocation;
- Collocation – includes CLEC to CLEC Connections; and

- Deaveraging of the UNE Loop.

Q. HOW DO YOU STRUCTURE YOUR DISCUSSION OF THE PHASE II ISSUES?

A. I address each of the enumerated issues individually and, where applicable, discuss the TELRIC studies associated with each issue.

B. The TELRIC Studies Related to UNE Remand

Q. IS QWEST SPONSORING A RECURRING TELRIC STUDY FOR THE UNE PLATFORM?

A. No. As described more fully in the testimony of Mr. Hooks, the UNE platform consists of either UNEs already existing in a pre-assembled connection to serve existing customers or UNEs not previously connected to serve new customers. Individual recurring UNE rates exist for the elements that make up the UNE platform, therefore, there is no need to file additional recurring cost studies in support of the UNE platform.

Q. IS QWEST SUBMITTING A NONRECURRING COST STUDY FOR THE UNE PLATFORM?

A. Yes. While individual nonrecurring UNE rates also exist for the elements that make up the UNE platform, the one-time activities associated with the conversion or connection of the UNE platform differ from the activities associated with connection of each individual element. Therefore, Qwest has developed nonrecurring cost studies to reflect the specific activities and times related to conversion and connection of UNE platforms. (See Exhibit TKM-1, nonrecurring costs for UNE Platform).

Q. IS QWEST SPONSORING RECURRING AND NONRECURRING COSTS FOR SUBLOOP UNBUNDLING?

A. Yes. While the Commission has already addressed the distribution subloop in the prior cost docket, I am presenting recurring and nonrecurring costs for the remaining subloop issues.

Qwest proposes that subloop unbundling be geographically deaveraged on the same basis as the zones that will be established by the Commission for UNE loops. The proposed prices for deaveraged subloops are based on developing the percentage relationship between the deaveraged rate on a "per zone" basis and the statewide average loop rate ($21.98) and applying that relationship to the statewide average distribution rate. The feeder rate is the difference between the distribution rate and the total loop rate. For example, on a statewide average basis the feeder rate for a DS0-equivalent loop is $6.65. The percentage relationship of deaveraged Zone 1 to the statewide average loop rate is 79.5% (i.e., 17.48/21.98). Therefore, the rate for the distribution portion of a loop based on Qwest's deaveraging proposal in Zone 1 is $12.19 (i.e., $15.33 x 79.5%), and the feeder portion for Zone 1 would be $5.29 (i.e., $6.65 x 79.5%). (See Exhibit TKM-2).

In addition, because it seems likely that a CLEC (competitive local exchange carrier) would want to purchase larger increments of feeder capacity, Qwest has also developed a rate for DS1 capable feeder. The DS1 capable feeder provides a digital transmission path from a network interface in a Qwest Serving Wire Center (SWC) to the Field Connection Point (FCP). (See Exhibit TKM-1 and TKM-3).

Q. DOES QWEST SPONSOR TELRIC STUDIES FOR HIGH CAPACITY LOOPS?

A. Yes. I present recurring and nonrecurring costs for high capacity loops. High capacity loops include DS1 and DS3 capable loops. A DS1 capable loop provides a digital transmission path from a network interface in a Qwest SWC to the network interface at the end user's designated premises within the serving area of the SWC. A DS3 capable loop provides a similar digital transmission path at a higher transmission rate than the DS1. The DS3 capable loop is configured as a channel on a fiber-based system. The recurring costs associated with DS1 and DS3 capable loops are attached as part of Exhibit TKM-3. The cost studies used to develop these costs develop statewide average rates for DS1 and DS3 capable loops.

The nonrecurring costs for DS1 and DS3 capable loops are included in Exhibit TKM-1.

Q. DOES QWEST SPONSOR TELRIC STUDIES FOR DARK FIBER?

A. Yes. Dark fiber includes fiber in both the loop and interoffice dedicated transport. Qwest has developed two separate cost structures for these two types of dark fiber. (See Exhibit TKM-3). Costs for interoffice dark fiber are on a per-mile basis consistent with the way that dedicated interoffice transport is calculated. Costs for loop dark fiber are on a per-loop basis consistent with the way that the loop is calculated. In other words, loop dark fiber has been developed to mirror the way fiber is found in the loop. For example, although a CLEC may access dark fiber anywhere that it exists, in a forward-looking model, Qwest considers copper wire to be the least cost, most efficient technology to use within 12 kilofeet of the central office. Therefore, the Qwest model assumes a 12 kilofoot crossover point for fiber in the loop.

The nonrecurring costs for dark fiber are included as part of Exhibit TKM-1.

Q. DOES QWEST PRESENT A TELRIC STUDY FOR SHARED TRANSPORT?

A. Yes. I am providing a recurring cost study for Shared Transport. Shared Transport, as defined by the FCC, represents access to an ILEC's shared *interoffice facilities* (i.e., facilities that carry traffic between ILEC central offices) at costs that reflect the efficiencies of the ILEC. Shared Transport is available only in conjunction with unbundled switching, due to the fact that switches perform the important gatekeeper function for access to the shared transport network.[9]

The recurring costs for Shared Transport are included in Exhibit TKM-4. Please refer to the testimony of Mr. Perry Hooks for a further description of Shared Transport service.

Q. IS QWEST FILING A NONRECURRING COST STUDY FOR SHARED TRANSPORT AT THIS TIME?

A. No. When a CLEC purchases shared transport, it must also purchase an unbundled switch port and switch usage. Qwest has not identified any additional nonrecurring costs for shared transport beyond the nonrecurring costs associated with unbundled switching. In the future, if any unique shared transport nonrecurring costs are identified, Qwest may file a nonrecurring cost study.

Q. PLEASE BRIEFLY DESCRIBE HOW SHARED INTEROFFICE FACILITIES ARE DIFFERENT FROM DEDICATED INTEROFFICE FACILITIES.

A. Interoffice transport includes the facilities that provide links between all of the central offices on the Qwest network (i.e., both tandem and end office switches). *Dedicated* interoffice facilities are set aside specifically for the full use of one customer or set of customers and cannot be shared by traffic from multiple

[9] Switches include the routing tables that route traffic over the shared transmission network. Without this switch function, shared transport could not be provided.

customers. *Shared* interoffice facilities are not dedicated to a specific customer, but are designed and engineered to handle switched traffic from all customers. Shared interoffice facilities, when used in connection with standard routing tables and central office switches, provide shared access to all of Qwest's switches.

Q. PLEASE COMPARE THE SHARED TRANSPORT TELRIC STUDY WITH THE DIRECT TRUNKED TRANSPORT (DTT) AND TANDEM SWITCHED TRANSPORT (TST) TELRIC STUDIES THAT QWEST FILED IN DOCKET NO. U-3021-96-448 ET AL.

A. The Shared Transport, TST and DTT TELRIC studies all develop transport investment utilizing the Qwest Transport Model. Thus, investments of all three are developed using the same basic TELRIC costing approach. However, the Shared Transport study is different from the previously filed DTT and TST studies because Shared Transport is a distinct offering that is *defined differently* than Tandem Switched Transport and Direct Trunked Transport. The cost results reflect these differences.

Direct Trunked Transport represents a dedicated path between two switching offices. A DTT link is not shared by multiple customers and does not carry POTS switched traffic. Tandem Switched Transport represents a shared interoffice path *between a tandem switch and an end office*—TST does not carry switched traffic directly between two end offices.

The Shared Transport cost study identifies the weighted per minute of use cost for three types of interoffice calls that utilize the common switched network:

1. *Direct end office to end office*- These calls are directly routed between the originating and terminating local end offices, and are not routed through a tandem switch.

End office to end office via a local tandem- These calls are routed from the originating end office to a tandem switch, and from the tandem switch to the terminating local end office.

End office to access tandem- These calls are routed from the originating local end office to the access tandem.

The Shared Transport TELRIC study separately calculates the "per minute of use" costs for each of the three types of calls. The per minute of use costs for each call type are weighted together based on Qwest trunk data, to yield a single Shared Transport per minute of use cost.[10]

Please refer to the study documentation for a complete description of the cost methodology used in the Shared Transport TELRIC study.

[10] The Shared Transport study weights the three types of calls based on the number of trunks in the Qwest network that are: (1) local end office to local office, (2) local end office to local tandem and (3) local end office to access tandem.

Q. DOES QWEST PROVIDE A TELRIC STUDY FOR INTER-CARRIER COMPENSATION?

A. No. As discussed in more detail in the testimonies of Dr. Taylor and Mr. Brotherson, Qwest believes that decisions around inter-carrier compensation should be made in the context of the resolution of certain policy issues.

Q. IS QWEST SPONSORING ANY OTHER TELRIC STUDIES FOR RECURRING AND NONRECURRING UNE RATES?

A. Yes. I will provide TELRIC studies for Channel Regeneration, the Customer Transfer Charge, deaveraging of the UNE loop, Line Sharing and Collocation as described in more detail below.

C. Channel Regeneration

Q. PLEASE DESCRIBE CHANNEL REGENERATION?

A. Channel Regeneration is available as an option when a CLEC requests DS1 and DS3 capable loops. Regeneration is used to overcome signal losses in transmission between electronic equipment within Qwest's central offices. The signal losses are a function of cable gauge and length.

Q. WHAT TELRIC STUDIES HAS QWEST PREPARED FOR CHANNEL REGENERATION?

A. Qwest has submitted both a recurring and nonrecurring cost study. The results of that study are summarized in Exhibit TKM-6B.

D. Customer Transfer Charge

Q. DOES QWEST PROVIDE A NONRECURRING TELRIC STUDY FOR THE CUSTOMER TRANSFER CHARGE?

A. Yes. Pursuant to the remand of this issue to the Commission in *U S WEST Communications, Inc. v. Jennings*, 46 F. Supp. 2d 1004 (D. Ariz. 1999), Qwest is submitting its nonrecurring study costs underlying the Customer Transfer Charge (CTC). The CTC study is cost based and reflects the tasks Qwest must perform when an end-user customer switches from one local carrier to another, including when the customer switches from Qwest to another local carrier.

The nonrecurring costs for CTC are included as part of Exhibit TKM-1.

E. Line Sharing

Q. WHAT IS LINE SHARING?

A. Line Sharing, which is defined as an Unbundled Network Element (UNE) by the FCC, involves the separate provisioning of the high frequency portion of the unbundled loop. In its Line Sharing Order, the FCC adopted "a requirement that incumbent LECs unbundle the high frequency portion of the loop to permit competitive LECs to provide xDSL-based services by sharing lines with the incumbent's voiceband services."[11]

Line Sharing is defined further in the testimony of Mr. Perry Hooks.

1. TELRIC & Line Sharing

Q. WHAT TYPES OF COSTS ARE ASSOCIATED WITH LINE SHARING?

A. In its Line Sharing Order, the FCC identified "5 types of direct costs that an incumbent LEC potentially could incur to provide access to line sharing: (1) loops; (2) OSS; (3) cross connects; (4) splitters; and (5) line conditioning."[12]

Q. HAS QWEST ESTIMATED THE COST TO INSTALL A SHARED LOOP?

A. Yes. The nonrecurring costs associated with the installation of a shared loop are calculated in the nonrecurring TELRIC study, the results of which are summarized in Exhibit TKM-1. The costs for installing a shared loop include order-processing costs at the Interconnection Service Center (ISC), along with the cost to connect jumpers.

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[11] Third Report and Order in CC Docket No. 98-147 and Fourth Report and Order in CC Docket 98-98 (released December 9, 1999), *In the Matters of Deployment of Wireline Services Offering Advanced Telecommunications Capability and Implementation of the Local Competition Provisions of the Telecommunications Act of 1996,* at ¶ 136.
[12] Line Sharing Order at ¶ 136.

Q. IS THE TELRIC METHODOLOGY HELPFUL IN DETERMINING A "COST" FOR THE HIGH FREQUENCY PORTION OF THE LOOP?

A. No. Clearly, the high frequency portion of the loop is significantly different than other UNEs in several respects. As noted by the FCC, "the TELRIC methodology that the Commission adopted in the Local Competition First Report and Order does not directly address this issue (line sharing)."[13] The FCC's original definition of TELRIC did not contemplate the idea that two separate unbundled network elements would share a single physical item of the telephone network—e.g., that a loop would be divided into two pieces based on the frequency spectrum used. TELRIC provides no guidance as to how costs can be allocated between the low and high frequencies of the loop.

Q. FROM A COST PERSPECTIVE, WHAT IS THE NATURE OF LINE SHARING?

A. The loop is a dedicated link to a customer. Line Sharing creates two links that are dedicated to a customer—a high frequency link and a low frequency link. The costs of each link are not caused by how the link is used. For example, the costs of the low frequency link are not impacted by whether the spectrum is used for local service, toll service or switched access. Likewise, the costs of the high frequency link are not impacted by how the CLEC may use this spectrum. There is no TELRIC basis for allocating the cost of the loop to these dedicated links.

[13] Line Sharing Order at ¶ 138.

In its Line Sharing Order, the FCC concluded that it "must extend the TELRIC methodology to this situation and adopt a reasonable method for dividing the shared loop costs."[14] However, TELRIC provides no method for such division of costs. Thus, we are left with the issue of how to divide the cost of the loop into high and low frequency portions.

Q. ARE THE COSTS OF THE LOOP COMMON TO BOTH THE HIGH AND LOW FREQUENCY PORTIONS OF THE LOOP?

A. Yes. If there were only a low frequency link, this would cause the cost of the loop. If there were only a high frequency link, this would cause the cost of the loop. However, there is no cost basis for assigning all of the costs to the high or low frequency portions, or apportioning the costs between them. Since there are two dedicated links (high frequency and low frequency), the cost of the loop is common to both links, and TELRIC does not provide a basis for an allocation of these costs. For an in-depth discussion of this concept, please refer to the testimony of Dr. Fitzsimmons.

Q. IF THERE IS NO TELRIC BASIS FOR APPORTIONING THE LOOP COSTS, HOW SHOULD THE HIGH FREQUENCY PORTION OF THE LOOP BE PRICED?

A. To the extent possible, the high frequency portion of the loop should be priced in a manner that encourages the market to act in an efficient manner. For example, the price should encourage rational decisions by CLECs as to whether they

[14] Line Sharing Order at ¶ 138.

should lease or construct facilities. The testimonies of Dr. Fitzsimmons and Mr. Hooks provide a further discussion of the appropriate approach to pricing the high frequency portion of the loop.

Q. HAS THE FCC EVER ORDERED A METHOD OF DIVIDING A SHARED COST AMONG PROVIDERS?

A. Yes. In the Advanced Services Order the FCC faced a similar situation where multiple providers caused a shared cost for collocation site preparation.[15] In that Order the FCC required the incumbent LEC to "prorate" or divide the single cost of site preparation in proportion to the space utilized by the provider. In other words, the FCC ruled that if two providers use the space, then the cost should be divided by two, with each CLEC paying one-half of the cost.

This division of shared collocation cost among providers is analogous to the situation of "dividing the shared loop costs" when a single line is shared by two providers.

[15] *In the Matter of Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket No. 98-147, Released March 31, 1999 at ¶ 41.

2. Line Sharing Price & Imputation

Q. DID THE FCC ADOPT A METHOD OF DIVIDING THE SHARED LOOP COSTS?

A. No. However, the FCC discussed line sharing rate setting principles in its Line Sharing Order. As noted above, the FCC stated that "we must extend the TELRIC methodology to this situation and adopt a reasonable method for *dividing the shared loop costs.*"[16] (emphasis added) The FCC also concluded that state commissions may "require that incumbent LECs *charge* no more to Competitive Local Exchange Carriers (CLECs) for access to shared local loops than the amount of loop costs the incumbent LEC allocated to ADSL services when it established its interstate retail rates for those services."[17] (emphasis added) The FCC noted that this is a "straightforward and practical approach for establishing rates" and that "this approach was recently approved by the Minnesota PUC."[18] The FCC Line Sharing Order, footnote 326 quotes the Minnesota Commission: "Specifically, the Minnesota PUC held that it was 'not presently concerned with how [Qwest] resolves the pricing issue, so long as the Company charges data CLECs the same loop rate that the Company presently *imputes* to its own DSL services'.

[16] Line Sharing Order at ¶ 138.
[17] Line Sharing Order at ¶ 139.
[18] Line Sharing Order at ¶ 139.

The intent of the FCC is not entirely clear. The FCC did not define a "method for dividing the shared loop costs". Rather, the FCC provided "guidance to assist in pricing". Paragraph 139 says nothing about "a reasonable method for dividing the shared loop costs", it talks about the amount that can be "charged". This implies guidance by the FCC, not on dividing ***cost***, but on ***price***. Thus, the FCC's guidance suggests that the proper line sharing price could be an amount no more than the loop cost that was "*imputed*" by the incumbent local exchange carrier (LEC) in its interstate xDSL service cost filing.

Qwest interprets the FCC's order as suggesting that an *imputation* analysis should be performed to prevent the possibility of a price squeeze for xDSL offerings. As I will describe below, the charges proposed by Qwest for the high frequency portion of the loop are consistent with the "imputation" standard referenced by the FCC for Qwest's own DSL service.

Q. DID QWEST CALCULATE THE COST OF ITS INTERSTATE DSL SERVICE IN A MANNER CONSISTENT WITH THE FCC'S PRICING GUIDELINES?

A. Yes. The FCC states in its Line Sharing Order, "Under the price cap rules for new access services, the recurring charges for such services may not be set below the direct costs of providing the service, which are comparable to incremental costs." Qwest complied with the FCC rules in this regard and filed only the direct costs of its DSL service. The direct costs of the DSL service do not include costs for the loop because the loop is not a direct cost of the service.[19]

Q. HAS QWEST EMPLOYED A METHOD TO IMPUTE THE PROPOSED PRICE OF THE HIGH FREQUENCY PORTION OF THE LOOP TO ITS INTERSTATE DSL SERVICE?

A. Yes. While the direct costs for interstate DSL service do not include any allocation of loop costs, Qwest's $29.95 price for DSL service includes an imputation of the price for the high frequency portion of the loop equal to 50% of the average Qwest UNE loop rate up to a maximum of $10. Imputations are normally accomplished in a secondary computation that is independent from the direct cost price floor demonstration.

Q. WHAT IS THE PURPOSE OF AN IMPUTATION?

A. Imputation is normally used as a mechanism to prevent a "price squeeze." For example, in some state jurisdictions Qwest has occasionally been required to impute access charges into its price floor for toll service, in order to preclude the possibility of toll prices that would result in what has been termed a "price squeeze". In this instance, the imputation study is performed in order to demonstrate that the proposed toll price exceeds a combination of "bottleneck" access charge rates that Qwest's toll competitors could be required to purchase

[19] The FCC's rules do not allow the incumbent LECs to file allocations of purported joint or shared costs in their cost filings. So not only did the FCC know that no loop costs were contained in the interstate DSL

from Qwest, plus the TSLRIC for other elements. The separate imputation study results are used as a price floor for "price squeeze" purposes.[20]

While states have sometimes required imputation, the FCC has never required imputation studies to be filed under its Price Cap rules for new service offerings. For this reason, Qwest did not file an imputation study with its interstate DSL filing.[21]

Q. DID THE FCC DISCUSS THE ISSUE OF A "PRICE SQUEEZE" IN THE CONTEXT OF LINE SHARING?

A. Yes. The FCC provided a guideline for charges associated with the use of the loop in line sharing. The FCC stated that any charge should not be greater than the amount attributed to the xDSL service, which would help eliminate the potential for a price squeeze. The FCC discussed the potential for a price squeeze if the price of an incumbent LEC's xDSL service was less than the amount a competitor would pay the incumbent LEC for the data spectrum of the loop plus the costs the competitor incurs to provide the service. By restricting the UNE amount charged for the higher spectrum of the loop to the level of loop cost implicit in the ILEC's retail DSL rate, the FCC concluded that any potential price

filings, but it also knew that to make any allocation of the loop would violate its rules and therefore the filing would be rejected. This provides additional support for the conclusion that the FCC was providing pricing guidance based on price, not a "dividing of cost."

[20] Of course, Qwest must still assure that its proposed toll prices also exceed direct costs (TSLRIC) in order to avoid the service being subsidized.

[21] Evidence of the secondary "price squeeze" calculation is found in the FCC's Order in CC Docket No. 98-79, Released Oct. 30, 1998, at 30-32, (ordering that GTE's DSL service was an interstate service).

squeeze is avoided. With the FCC's reference of both the direct cost rule and the issue of price squeeze, it is clear that an approach of using two independent calculations is consistent with standard regulatory practice and the Line Sharing Order.

Q. IS QWEST PROPOSING A RATE FOR THE USE OF THE LOOP IN LINE SHARING?

A. Yes. The proposed charge for the high frequency portion of the unbundled loop is 50% of the unbundled loop rate ordered by the Commission up to a maximum of $10. Qwest is proposing the following rates for the line sharing loop UNE:

	Proposed Unbundled 2-Wire Rate	Proposed Line Sharing 2-Wire UNE Rate
Zone 1	$17.48	$8.74
Zone 2	$20.84	$10.00
Zone 3	$37.74	$10.00

	Excluding Sold Wire Centers Proposed Unbundled 2-Wire Rate	Excluding Sold Wire Centers Proposed Line Sharing 2-Wire UNE Rate
Zone 1	$17.45	$8.73
Zone 2	$20.79	$10.00
Zone 3	$33.84	$10.00

Q. IF QWEST WERE TO PERFORM AN IMPUTATION CALCULATION RELATED TO ITS DSL SERVICE OFFERING, WOULD IT PASS AN IMPUTATION TEST THAT INCLUDES THE IMPUTED PRICE FOR THE HIGH FREQUENCY PORTION OF THE LOOP?

A. Yes. The $29.95 retail price for Qwest's DSL offering is at a level that exceeds the service's direct costs plus an imputation of the proposed line sharing UNE rate[22]. This demonstrates that the line sharing UNE charge proposed by Qwest for the use of the high-frequency portion of the loop meets the FCC's guideline.

3. Line Sharing & Collocation

Q. HAS QWEST PREPARED A COST STUDY THAT IDENTIFIES THE COLLOCATION COSTS ASSOCIATED WITH LINE SHARING?

A. Yes. The Qwest Line Sharing Collocation cost study results are summarized in Exhibit TKM-5. This study identifies the costs associated with three basic line sharing collocation options. These options relate to the configuration of the splitter and associated cabling (cross connects). Briefly, these configurations are:

- Splitter in a common area relay rack or bay;
- Splitter mounted on an Intermediate Distribution Frame;

[22] While the $29.95 service is used in the example, the $19.95 rate would also pass the same imputation test.

- Splitter mounted on a Main Distribution Frame.

In the Qwest Line Sharing Collocation study, the costs for each configuration include the cost of engineering, plus the applicable block and cabling costs. In each case, the costs do *not* include the costs for the splitter itself. Costs for the block and cabling are presented as a cost per 100 lines, while the engineering costs are presented on a per order basis.

I will briefly describe the collocation cost study below. Please refer to the testimony of Mr. Robert Hubbard for a detailed description of the line sharing collocation elements.

Q. PLEASE BRIEFLY DESCRIBE THE ENGINEERING COSTS.

A. The engineering costs include the cost to engineer a collocation job. These costs are based on 20 hours of engineering time, as described in the testimony of Mr. Hubbard, and are the same regardless of the line sharing option chosen. That is, each CLEC ordering collocation for line sharing would be charged for the recovery of this cost, regardless of which of the three options are chosen.

Q. PLEASE BRIEFLY DESCRIBE THE FIRST COLLOCATION OPTION.

A. With Option 1, the splitter is located in a common area on a splitter bay. The Option 1 costs include three principal cost components:

1. Splitter bay shelf – This includes the network bay, aerial support and cable racking at the common splitter location.

2. Cable from splitter to CLEC – There are two sub-options, based on the CLEC's cabling (cross-connect) needs. The splitter can be cross-connected directly to the CLEC's collocation area (Option 1A), or it may be connected to the 410 block on the intermediate distribution frame (Option 1B). This option may be chosen if the CLEC has existing but unutilized tie cabling between the intermediate frame and the collocation area. In this case, those connections can be used for the line sharing connections without the ordering of additional connections from Qwest. If the splitter is connected to the 410 block, the costs include the costs associated with tying the cable to the block, etc. These arrangements are depicted in the diagrams on page 1 of Exhibit TKM-5A.

3. Cable from splitter to intermediate distribution frame (IDF) – This includes the cost of the two cables (voice and voice/data) connecting the splitter with the IDF. It includes cable and block expenses, as depicted in the diagram at the bottom of page 1 of Exhibit TKM-5A.

With this option, the CLEC would also need to purchase Interconnection Tie Pairs (ITPs) to connect the IDF to the Main Distribution Frame (MDF), as depicted in the third diagram on page 1 of Exhibit TKM-5A.

Q. PLEASE BRIEFLY DESCRIBE THE SECOND COLLOCATION OPTION.

A. With the second option, the splitter is located on the Intermediate Distribution Frame (IDF). The CLEC may either cross-connect directly between the splitter and the CLEC collocation area (Option 2A) or it may cross-connect to the 410 block on the IDF (Option 2B). The Option 2A costs include the cost to mount the splitter block and the cost of the cable between the splitter and the CLEC collocation area. The Option 2B costs include the cost to mount the splitter block, the cost of the cable between the splitter and the 410 block, and the cost to tie the cable to the 410 block. This option is depicted on page 2 of Exhibit TKM-5A.

With Option 2, the CLEC would also need to purchase ITPs to connect the IDF to the Main Distribution Frame (MDF), as depicted in the diagram on page 2 of Exhibit TKM-5A.

Q. PLEASE BRIEFLY DESCRIBE THE THIRD COLLOCATION OPTION.

A. With the third option, the splitter is located on the Main Distribution Frame (MDF). The CLEC may either cross-connect directly between the splitter and the CLEC collocation area (Option 3A) or it may cross-connect to the 410 block on the MDF (Option 3B). The Option 3A costs include the cost to mount the splitter block and the cost of the cable between the splitter and the CLEC collocation area. The Option 3B costs include the cost to mount the splitter block, the cost of the cable between the splitter and the 410 block, and the cost to tie the cable to the 410 block. This option is depicted on page 3 of Exhibit TKM-5A.

With Option 3, the CLEC would not need to purchase ITPs, since there is no cross-connection between the MDF and the IDF.

Q. WHAT GUIDELINES DID THE FCC PROVIDE REGARDING CROSS CONNECTS?

A. The FCC discusses the architecture for the connections to and from the splitters. The FCC described two approaches:

> The first approach is to cable the high frequency band directly to the DSLAM, and the second is to cable it to another MDF location (or to an intermediate distribution frame (IDF) location), and then on to the DSLAM. The second approach facilitates easy customer moves and changes as well as changes in the customer's service providers and services. In this situation, the splitter has three connections to the MDF – one to terminate the loop, a second to terminate the voiceband signal and a third to terminate the high frequency loop spectrum....[23]

Q. PLEASE DESCRIBE THE FCC'S GUIDELINES FOR COSTS RELATED TO THE VOICE/DSL SPLITTERS.

A. The FCC determined that LECs must *either provide splitters or allow* CLECs to purchase comparable splitters. Where the splitter is in the CLEC's collocation space, the CLEC would purchase the splitter itself. When Qwest constructs the splitter bay for the CLEC, the FCC allows Qwest to charge the CLEC an amount equal to the cost of the splitter, plus the cost to construct the bay and supporting

[23] Line Sharing Order at ¶¶ 104 and 105.

structure. If it desires, the CLEC can choose to purchase the splitter, and transfer it to Qwest to install.

Q. ARE THE DESIGNS PROPOSED BY QWEST CONSISTENT WITH THESE FCC REQUIREMENTS?

A. Yes. The Qwest proposal provides CLECs with several options, and is consistent with the FCC's description of how cross-connects and splitters should be treated in a line sharing environment.

4. Line Sharing & Operational Support Systems

Q. WHAT OPERATIONAL SUPPORT SYSTEMS COSTS DOES QWEST SEEK TO RECOVER IN THIS PROCEEDING?

A. Qwest seeks to recover, as a component of the monthly charge for the line sharing UNE, the Operational Support Systems (OSS) costs related to implementing line sharing, as authorized by the FCC in its Line Sharing Order.[24] The line sharing costs Qwest seeks to recover have two components. The first component is the cost for modifications to internal systems maintained by Qwest and is estimated to be $870,720. These costs are described more fully in the testimony of Ms. Albersheim. The second component is the direct expense that Qwest will incur with its outside vendors to modify the many legacy systems impacted by the requirement to line share. Also described in detail by Ms.

Albersheim, these costs include a bid of $11.9 million from Telcordia for systems modification and $56,000 for project management provided by another company. Because

Qwest's OSS function on a company-wide basis and support the entire 14-state region, these costs are incurred at a corporate level rather than a state level. Therefore, the OSS study for line sharing and the resulting OSS rate is determined on a total company basis using total company demand for shared lines. CLECs competing in Arizona will pay their share of these costs on the basis of the number of lines actually shared in the state.

Please see the Line Sharing OSS cost study to review documentation of the calculation of the proposed OSS rate associated with line sharing.

Q. IS QWEST ENTITLED TO RECOVER OSS COSTS RELATED TO THE LINE SHARING UNE?

A. Yes. The FCC has stated that ILECs must modify their operating support systems that are required for preordering, ordering, provisioning, repair and maintenance, and billing. The FCC also stated:[25]

> There is no dispute either that incumbent LECs will need to modify their OSS systems somewhat in order to implement line sharing, or that they

[24] At ¶ 144 the FCC stated, "We find that incumbent LECs should recover in their line sharing charges those reasonable incremental costs of OSS modification that are caused by the obligation to provide line sharing as an unbundled network element."
[25] Line Sharing Order at ¶ 142.

> will incur costs in doing so. The question here is what the incumbent LECs should be permitted to charge competitive LECs for those required modifications.

It is clear from the preceding that the FCC intended that ILECs be allowed to recover the additional costs for OSS related to the line sharing UNE.

Q. ISN'T IT TRUE THAT THE COST TO MODIFY OSS SHOULD BE RELATIVELY MODEST BECAUSE ILECS HAVE "ALREADY MODIFIED THEIR OSS SYSTEMS TO ACCOMMODATE THEIR OWN XDSL PRODUCTS..."?[26]

A. No. As described in detail in Ms. Albersheim's testimony, line sharing creates very different requirements than those Qwest has for provisioning xDSL service on its own loops. When Qwest provides xDSL to its customer, there are two services being provided but there is still only one service provider and one end-user customer. In the case of line sharing, there are two unrelated service providers (i.e., Qwest and the CLEC) and two customers (i.e., the end-user customer and the CLEC). Qwest's systems were not originally designed for multiple local service providers and multiple customers for a single loop. Thus the OSS modifications necessary for Qwest to be able to accommodate line sharing for the CLECs are independent of modifications it has made to meet its own needs as a single provider of multiple services.

[26] Line Sharing Order at ¶ 127.

Q. WHAT RATE DOES QWEST PROPOSE TO USE FOR RECOVERY OF ITS LINE SHARING OSS COSTS?

A. Qwest proposes that the OSS cost for line sharing be recovered through a recurring monthly rate of $3.20 per line for each line that is shared with a CLEC. This approach to cost recovery of the line sharing OSS is based on guidance from the FCC at paragraph 144 of the Line Sharing Order which stated:

> We find that incumbent LECs should recover in their line sharing charges those reasonable incremental costs of OSS modification that are caused by the obligation to provide line sharing as an unbundled network element. We believe that this guideline is consistent with the principle set forth in the *Local Competition First Report and Order* and incumbent LECs cannot recover nonrecurring costs twice. We also reaffirm the conclusions in the *Local Competition First Report and Order*, that the states may require incumbent LECs in an arbitrated agreement to recover such nonrecurring costs such as these incremental OSS modification costs through recurring charges over a reasonable period of time, and that nonrecurring charges must be imposed in an equitable manner among entrants. [Footnotes omitted].

Q. WHY DID THE FCC SUGGEST RECURRING RATES TO RECOVER UP-FRONT COSTS FOR THE LINE SHARING OSS?

A. The FCC cited estimates that ranged from three million to hundreds of millions of dollars as the costs to modify OSS for line sharing. It is likely that the FCC recognized that because of the large amount of cost required for such modifications, up-front recovery of these costs could discourage line sharing. To remedy the problem, the FCC suggestion allows recurring rates to distribute the cost over "a reasonable period of time."

Q. DOES THE USE OF RECURRING RATES FOR RECOVERY OF AN UP-FRONT COST CREATE ANY SPECIAL ISSUES?

A. Yes. First, the "reasonable period of time" has to be determined. Basic financial tenets would imply a recovery period that corresponds to the estimated life of line sharing. This would mean that a reasonable period would be an estimate of the useful life of line sharing – Qwest providing the voice service and the CLEC providing the DSL service. Although, Qwest has requested such data from the CLECs in other jurisdictions, and will attempt to obtain information in this proceeding, it has not received sufficient information to make such a projection based on CLEC input. Therefore, Qwest has estimated the useful life of OSS for line sharing based on the depreciation life of the underlying asset. In this case, the underlying assets are the computers that make up Qwest's OSS. These OSS assets reside in account 2124, General Purpose Computers, an account which has an estimated depreciation life of five years. Thus, it is Qwest's position that a five-year useful life for line sharing OSS is appropriate. In addition, in today's rapidly changing technological environment it is difficult to envision a useful life for a given technical solution that extends beyond five years.

The second issue is the demand over which the rate will be applied, for example, per line per month. In order to properly develop a recurring rate that will come reasonably close to recovering the cost, an estimate of the number of lines to be shared is required. This information was also requested from the DSL providers in other jurisdictions, but Qwest has not received this data, either. As indicated by the requests for information, Qwest would prefer to have the CLECs' projections to use as inputs for estimating the rate for recovery of the OSS costs. However, since this data was only provided on a limited basis by one CLEC, Qwest used the best information available to estimate demand, including an amount for potential churn. Projections were made of the number of lines to be shared for the first two years and trends were developed from this information for five years. Qwest is willing to consider alternative inputs if the CLECs have information that they would be willing to provide.

F. Collocation

Q. WHY IS IT APPROPRIATE FOR QWEST TO FILE ITS COLLOCATION STUDY AT THIS TIME?

A. Qwest is filing a Collocation study for two reasons. First, the FCC has issued its Advanced Services Order strengthening the collocation rules and addressing new requirements for collocation.[27] Similar to the UNE Remand Order, Qwest is faced with new collocation elements and new configurations of existing elements. As a result, Qwest now offers cageless collocation as an option, as well as a standard design and price for both caged and cageless collocation. The standard price includes common designs for elements such as cable racking,

[27] CC Docket No. 98-147, Released March 31, 1999.

power, or number of bays. However, the new approach also allows CLECs the flexibility to make specific changes that "customize" the collocation to fit their needs, again at pre-determined prices, thus eliminating the requirement for Individual Case Basis (ICB) pricing.

Second, Qwest is also filing its Line Sharing study in this docket. The Commission in its Procedural Order, issued August 21, 2000, stated that issues associated with line sharing should be addressed. The Line Sharing cost study is primarily focused on the collocation elements associated with provisioning the line sharing capability at the central office, including splitter equipment described in Mr. Hubbard's testimony. Since the line sharing collocation elements are based on Qwest's latest Collocation cost study, it makes sense to address those elements concurrently.

Q. WHAT COST DATA IS PROVIDED IN THE COLLOCATION MODEL?

A. The Collocation Model provides cost data for caged, cageless and virtual collocation, and includes TELRIC data for the following collocation elements:

Standard Collocation:

- Teminations
- Collocation Entrance Facility
- Cable Splicing

- Power Usage
- Security
- Interconnection Tie Pairs (ITPs)

Cageless Collocation:

- Space Construction
- DC Power Cable
- Space Rent
- Quote Preparation Fee (QPF)

Caged Collocation:

- Space Construction
- DC Power Cable
- Grounding
- Space Rent
- Quote Preparation Fee (QPF)

Virtual Collocation:

- Equipment Bay
- Labor
- Quote Preparation Fee (QPF)

The Collocation Model summary of results is included as Exhibit TKM-6 of my testimony. Please refer to the testimony of Mr. Robert Kennedy for a description of collocation arrangements and elements. Mr. Perry Hooks discusses the Interconnection Tie Pair (ITP) in his testimony.

Q. HAVE YOU PREPARED SCHEMATIC DIAGRAMS THAT DEPICT THE VARIOUS COLLOCATION ELEMENTS?

A. Yes. Exhibit TKM-6A contains several schematic diagrams that depict the collocation cost elements. Page 1 of this exhibit provides a diagram that shows the overall collocation configuration, while pages 3 through 6 provide more detailed diagrams for power plant, entrance facility, space construction and terminations.

Q. WILL QWEST SUBMIT AN ADDITIONAL TELRIC STUDY TO DEVELOP COSTS FOR CLEC TO CLEC CONNECTIONS?

A. Yes. Qwest will submit an additional TELRIC study for CLEC to CLEC Connections. These additional collocation elements are not contained in the Collocation model.

CLEC to CLEC Connections are available when one CLEC desires interconnection with another CLEC within the same Qwest central office or when a CLEC with multiple Collocations within the same office wishes to connect those Collocations. CLEC to CLEC Connections may be physical to physical, physical to virtual, or virtual to virtual. These types of Collocation arrangements (i.e., physical and virtual) are described in more detail in Mr. Kennedy's testimony.

CLEC to CLEC Connections will include both recurring and nonrecurring costs as summarized in Exhibit TKM-6C.

Q. DOES THE COLLOCATION MODEL CALCULATE RECURRING AND NONRECURRING COSTS?

A. Yes. The Collocation Model calculates the forward-looking recurring and nonrecurring incremental costs for the collocation elements listed above. The nonrecurring costs include the cost of installing equipment on the CLEC side of the demarcation point. This equipment is dedicated to CLECs and is not shared with Qwest. The nonrecurring cost elements include: Terminations, the Entrance Facility, Fiber Cable Splicing, Backup AC Power Cable, Space Construction (including DC power cables), Construction of Additional Bays (Cageless) and Grounding (Caged).

Recurring elements include the small ongoing costs associated with maintaining the collocation equipment that is dedicated to CLECs (e.g., Terminations, Power Cables, Space Construction), along with the investment-related costs associated with equipment that is shared between CLECs and Qwest. Recurring elements also include: DC Power Plant, AC Power Feed Usage, Security Cards, Central

Office Synchronization, Interconnection Tie Pair (ITP), Space Rent, Grounding (Caged), and Equipment Bay (Virtual).

Q. IS THE TREATMENT OF RECURRING AND NONRECURRING COSTS IN THE COLLOCATION MODEL CONSISTENT WITH THE FCC'S COLLOCATION PRINCIPLES?

A. Yes. In its Second Report and Order in CC Docket No. 93-162, regarding pricing for collocation, the FCC set out principles for determining whether a cost should be recovered through a nonrecurring charge. In Paragraph 32 of that order the FCC states:

> While carriers typically recover investment costs through recurring charges, we find that it is not unreasonable for LECs to assess nonrecurring charges to recover the cost of equipment. Inasmuch as physical collocation is a new service, LECs may have difficulty projecting either the length of time that equipment will be used by an interconnector or the useful life of that equipment for depreciation purposes. When a LEC imposes a recurring charge to recover the depreciation of an asset over time, overestimating the life of the equipment or the length of time that an interconnector would use the equipment could prevent the LEC from recovering the total cost of its investment. We will not, however, permit LECs to recover initially an amount greater than the total installed cost of the equipment, plus a reasonable overhead loading.

The FCC went on to say in paragraph 33:

> We do not agree with ALTS' position that nonrecurring charges developed in conformance with these requirements constitute a barrier to entry. To the extent that the equipment needed for expanded interconnection service is dedicated to a particular interconnector, we believe that requiring that interconnector to pay the full cost of the equipment up front is reasonable because LECs should not be forced to underwrite the risk of investing in equipment dedicated to the interconnectors use, regardless of whether the equipment is reusable....

It is clear from these ordering paragraphs that the FCC recognizes that LECs should not be held accountable for underwriting all the risk of building an interconnector's network. The FCC established the costing principle that the cost of facilities constructed solely for the provisioning of collocation (i.e. dedicated to collocation) can be recovered through nonrecurring up front charges. In fact the order goes so far as to imply anything else would result in an unreasonable transference of the risk of constructing a CLEC network to the ILEC that is providing collocation. The 1996 Telecommunications Act was designed to give competitors access to critical network elements that were currently owned by the ILECs. This access to elements was considered critical to meeting the competitive objectives of the Act. Nowhere in the Act did Congress decide that it was also the ILEC responsibility to finance a co-provider's entry into the market. Such a requirement would be unreasonable and discriminatory.

Q. PLEASE EXPLAIN HOW THE DIRECT COLLOCATION COSTS ARE DEVELOPED IN THE COLLOCATION MODEL.

A. The direct costs for the bulk of the collocation cost elements are calculated based on inputs derived from an analysis of the cost of *actual collocation jobs* in Qwest central offices. In this analysis, Qwest analyzed every item that was purchased and installed for a sample of collocation jobs. The invoices were analyzed through a multi-step process as follows:

1. Each item of material that was billed to each job was entered into a database;

2. Each item of material was classified into cost categories that represent the various components of collocation (i.e. cable racking, power cable, support structure, etc.);

3. The costs for placing each component of a collocation job were calculated using standard contract labor costs along with the number of units being placed on each job, as determined from the invoices;

4. The calculated labor costs were compared to the actual invoiced labor charges to determine that they were reasonable;

5. The labor costs were added to the material costs to determine the total cost for each component of the job;

6. The cost for each component was assigned to each of the appropriate collocation rate elements;

7. The collocation rate element were designated as being recoverable through a one-time nonrecurring charge or a monthly recurring charge, based on the criteria discussed above;

8. Nonrecurring cost elements that are shared among collocators were prorated based on the anticipated number of CLECs that would participate in the use of those facilities;

9. The results of the analysis were used as inputs to the Collocation Model to develop the direct costs associated with each collocation element.

Q. WHAT TYPES OF COLLOCATION JOBS WERE INCLUDED IN THE SAMPLE?

A. The sample included only cageless collocation jobs. Once the analysis of cageless costs was completed, the assumptions were revised and the missing elements were added to derive a standard cost for a *caged* collocation job. Wherever possible, actual caged collocation data was used in revising the assumptions or estimating the cost for those components of a caged collocation job (e.g., the cost of the cage) which are not found in cageless collocation jobs.

Q. HOW DID QWEST TAKE INTO ACCOUNT THE COST DIFFERENCES BETWEEN CAGELESS AND CAGED COLLOCATION?

A. A team of experts with experience in the development, construction and cost analysis of collocation activities reviewed the assumptions used in the cageless cost study and agreed upon revisions to distances and other inputs that would more appropriately reflect a standard caged collocation environment. In addition, items such as the cost of the cage and grounding were included in the caged collocation cost study.

Q. HOW DID QWEST IDENTIFY THE JOBS THAT WERE TO BE INCLUDED IN THE COLLOCATION ANALYSIS?

A. Qwest analyzed all cageless collocation jobs that were constructed prior to May of 1999. In total, 96 jobs were originally identified as meeting these criteria. Nineteen of the jobs identified were augments of existing jobs and were eliminated from the sample. All the receipts for the remaining 77 collocation jobs were then collected. In certain instances, there is a significant lag between the completion of the job and the receipt of the vendor billing for that job. To determine if the company had received the contractor billing for all the work performed on a specific job, the receipts for each job were compared to the authorized purchase orders for those jobs. If this comparison showed that the billing for virtually all the contracted construction had been received, the job was retained in the sample. Jobs with greater than 10% of the total billing still outstanding were removed from the sample. Of the 77 jobs, the billing on 41 jobs was sufficiently complete to use in the analysis.

Q. IN THE FIRST STEP IDENTIFIED ABOVE, YOU NOTED THAT MATERIAL ITEMS WERE ENTERED INTO A DATABASE. WHAT DATA DID THE COMPANY ENTER INTO THE DATABASE?

A. For each job, the database contains the type of material purchased, the quantity purchased, the purchase price and the standard contracted labor rates for placing the facility. In Step 2, each item or group of items was then categorized into groups that represent the various components of a collocation installation.

For example, all the material items, such as cable, fuses, and lugs used to connect various sizes of power cable were grouped into the Power Plant category. Similarly, cable racking, cable horns and the components used to connect the racking were placed in a Cable Racking category.

Q. IN STEP 3, WHY DID YOU USE STANDARD CONTRACTED LABOR COSTS AS OPPOSED TO USING THE ACTUAL LABOR THAT WAS BOOKED TO THE JOB?

A. The invoices for labor costs did not contain an itemized list of all the functions that were performed by the contractors. Virtually all the bills only listed the total hours spent on the job along with the total cost for all functions performed. To determine costs for an average collocation job, these labor costs needed to be identified with the same cost components as the material costs. To accomplish this, the study multiplied the standard contract labor rate for each function times the unit volumes obtained from the material receipts to develop costs by category. In Step 4, the total of these costs were then compared to the actual labor receipts to ensure that the calculations produced reasonable results. Also, in Step 4, the labor costs were added to the material costs to determine the total cost for each component of the job.

Q. HOW DO THE COLLOCATION CALCULATIONS ALLOW FOR DIFFERENCES BETWEEN THE COSTS FOR VARIOUS COLLOCATION DESIGNS?

A. Qwest gives collocators many options. For example, a collocator may order several types of terminations, and may order several different sizes of DC power cable based on its specific power needs. To account for these variations in the requested facilities, Qwest developed standard costs for terminations and power feeds. These standard costs were modeled based on the characteristics (i.e. material and labor costs and unit quantities and standard distances and designs) found in the 41 jobs that were studied. These standard designs were then adjusted to account for any incremental cost or savings that would be incurred if the design was altered.

Q. ONCE COSTS FOR COST COMPONENTS WERE IDENTIFIED, WHAT WAS THE NEXT STEP IN THE COST DEVELOPMENT PROCESS?

A. The next step (Step 6) in the cost analysis assigned the individual cost components to collocation rate elements, as listed above and as described in the testimony of Mr. Kennedy. In some cases, several cost components (e.g. cable racking, support structure, etc) are recovered through a single collocation element (e.g. Space construction).

Q. ARE THE COSTS FOR THESE JOBS ASSIGNED TO BOTH RECURRING AND NONRECURRING COST CATEGORIES?

A. Yes. As I noted earlier, the study develops nonrecurring costs that include the cost of equipment that is dedicated to CLECs, and recurring costs that include the cost of equipment that is shared between CLECs and Qwest. In Step 7, the costs of the collocation jobs were assigned to the nonrecurring and recurring categories.

Once the nonrecurring cost of equipment that is dedicated to CLECs was identified, the next step in the cost study process (Step 8) was to identify those nonrecurring components of a standard collocation that would be used by more than one collocator. Several components of a standard collocation were determined to fall into this category including (but not limited to) lighting, cable racking, aerial support structure and heating, ventilation and air conditioning (HVAC). The costs for these elements of collocation were prorated over the number of collocators that were anticipated to use the facilities.

At this point in the process, all the costs have been assigned to specific collocation components such as cable racking, power cable, support structure and terminations. The costs have also been identified as being recoverable through recurring or nonrecurring charges.

Q. DOES QWEST'S COLLOCATION COST STUDY COMPLY WITH RECENT FCC ORDERS REGARDING COLLOCATION?

A. Yes. The Qwest's collocation study complies with FCC Order CC Docket No. 98-147 which is sometimes referred to as the Advanced Services Order and sometimes the "706" rules. This order primarily approaches collocation from a perspective of determining what collocation elements need to be offered and under what terms and conditions they should be offered, rather than from a cost perspective. However, the FCC does provide some direction regarding cost methodology for site preparation. The FCC states:

> "For example, if an incumbent LEC implements cageless collocation arrangements in a particular central office that requires air conditioning and power upgrades, the incumbent may not require the first collocating party to pay the entire cost of site preparation."

Qwest's cost studies assume an average of 3 cage collocators and 3 cageless collocators in each central office. This assumption means that those costs related to construction are divided by 3 in cases where a facility (e.g., a cable rack) is used only by cage collocating CLECs. Where facilities are assumed to be shared by CLECs and Qwest, the costs are assumed to be limited to only recurring charges, and are determined on a shared basis with all users. This cost methodology is consistent with the FCC's direction in its 706 rules.

Q. YOU MENTIONED THAT THE COLLOCATION COST CALCULATIONS ARE CONSISTENT WITH THE FCC'S REQUIREMENTS. IS THE USE OF ACTUAL COLLOCATION JOB DATA IN THE COLLOCATION COST CALCULATIONS CONSISTENT WITH THE RECENT EIGHTH CIRCUIT COURT ORDER?

A. Yes. As noted earlier in my testimony, the Eighth Circuit Court, in addressing the FCC's TELRIC rules, determined that UNE costs should be developed using an "actual" forward-looking cost standard, not a "theoretical" forward-looking cost standard. While the Court's ruling applies to UNEs, the same logic should be applied to the development of collocation costs. The use of actual collocation job data is consistent with the spirit of the Eighth Circuit Court's order, and results in an estimate of actual forward-looking collocation costs.

Q. HOW FLEXIBLE IS QWEST REGARDING THE ELEMENT DEFINITIONS PROPOSED HEREIN?

A. Qwest is flexible in this regard. It has only attempted to develop elements that meet our co-provider's needs. For instance, the collocators have asked Qwest to design a rate structure with less variability. They wanted a flatter or more constant pricing design. Qwest has attempted to do this by eliminating some distance sensitive prices, combining elements and averaging costs between jobs. If this proposal does not meet co-provider's needs, Qwest would be willing to consider changes to the product design. To Qwest, the important aspect of collocation is meeting the co-provider's needs and recovering costs. The product design can be changed but it should meet these two objectives.

G. UNE Loop Deaveraging

Q. DID THE ARIZONA COMMISSION MAKE A DETERMINATION REGARDING INTERIM DEAVERAGING IN PHASE I OF THIS PROCEEDING?

A. Yes. The Commission determined to use Qwest's proposed "zone increment" method, based on Qwest's current retail zone structure, for establishing interim deaveraged rates. In doing so, the Commission in its Opinion and Order agreed with Qwest that "Commission policy in setting retail rates needs to be taken into consideration in setting geographic deaveraged UNE rates."[28] However, in analyzing the parties' submissions in Phase I, the Commission also made it clear that it believed the proposals by Staff and AT&T "reflect actual costs better than the U S WEST [Qwest] proposal."[29] The Commission concluded that a gradual move to a cost based rate structure would be more appropriate, yet consistent with the objectives of the Act.

Q. WHAT IS QWEST PROPOSING FOR UNE LOOP DEAVERAGING IN PHASE II OF THIS DOCKET?

A. Based on the Commission's order in Phase I, Qwest is proposing a three-zone, cost based, wire center deaveraging scheme using the FCC's Synthesis Model (SM), also known as the Hybrid Cost Proxy Model, similar to the Arizona staff's Phase I proposal. (See Exhibit TKM-2).

Q. HOW WERE THE COSTS FOR THE THREE ZONES DETERMINED?

A. Qwest used the Synthesis Model to determine loop cost by wire center. The wire centers were then ranked, by cost, and zones were determined by grouping them as follows: Zone 1, wire centers with costs below $16.99; Zone 2, wire centers with costs above $16.99 and at or below $19.99; and Zone 3, wire centers with

[28] *In the Matter of Investigation into U S WEST Communications, Inc.'s Compliance with Certain Wholesale Pricing Requirements for Unbundled Network Elements and Resale Discounts*, Docket No. T-00000A-00-0194 (Phase I), Decision No. 62753.
[29] Opinion and Order at p. 5.

costs above $19.99. A weighted average cost was then calculated for each zone using Qwest's current line counts for each wire center. The statewide average loop cost using the SM was $19.30. This result was then divided into the statewide average cost of $21.98 to develop a scaling factor (1.1400) that could be multiplied against the cost for each wire center to produce a wire center cost based on the statewide average. The weighted average scaled costs were then grouped by zone to produce an average cost for each zone.

Q. ARE THERE ADVANTAGES TO QWEST'S PROPOSAL IN THIS PROCEEDING?

A. Yes. First, while Qwest still believes in the importance of consistency between retail and wholesale rates, the Commission has stated that it believes the wire center approach is a better reflection of cost based wholesale pricing. The Qwest proposal in Phase II is cost based and uses the same "ranking of wire centers by cost" approach that Staff and AT&T proposed in Phase I.

Second, both Staff and AT&T criticized Qwest in Phase I for proposing a method that resulted in 95% of lines being located within the Base Rate Area. The Qwest proposal in this phase results in approximately twice the number of lines in the lowest cost zone than in the middle cost zone and roughly 1.5 the number of lines in the middle cost zone than the highest cost zone, i.e., 54% in Zone 1, 28% in Zone 2 and 18% in Zone 3. In addition this proposal has roughly the same number of wire centers in zones one and two and the remainder in zone three.

Finally, Qwest's wholesale rate proposal results in rates that provide for gradual movement toward a cost based structure for retail rates. In Qwest's retail proposal, the vast majority of customers in the Phoenix and Tucson areas reside in the lowest-priced Base Rate Area. Under its wholesale deaveraging proposal most of the customers in those two cities will also fall into Zone 1 or Zone 2, the two lowest-cost zones, for wholesale purposes. Qwest believes that this approach provides a basis which addresses both the Commission's concern about having wholesale zones reflect cost based pricing, and its concern about the impact that such an approach might ultimately have on retail rates.

Q. WHAT ARE THE RATES DETERMINED BY THIS INFORMATION?

A. The deaveraged unbundled loop cost/rates are:

Zone 1	$17.48
Zone 2	$20.84
Zone 3	$37.74

Q. DOES THIS CALCULATION OF THE UNBUNDLED LOOP UNE RATE INCLUDE WIRE CENTERS THAT QWEST IS PROPOSING TO SELL IN ARIZONA?

A. Yes. I have included in the cost calculation of the unbundled loop UNE the wire centers that Qwest is proposing to sell in Arizona. The reason for this is that the original calculation of the statewide average rate (i.e., $21.98), that is the basis for the proposed deaveraged rates, included those wire centers. In addition, it is difficult to exclude wire centers from the calculation with certainty until the sales of those wire centers have closed. As the Commission knows, from a legal and regulatory perspective, Qwest continues its responsibility for those wire centers up until the time that legal ownership transfers to the purchasing entity. Therefore, I believe that it is appropriate to include the wire centers that are "for sale" in the calculation of the UNE loop rates.

Nevertheless, recognizing that under a TELRIC methodology one could argue that wire centers that have been contracted for sale should be excluded from forward-looking costs, I have also calculated the unbundled loop UNE with the wire centers that are identified in the contract excluded.

Q. WHAT ARE THE DEAVERAGED RATES WITH THE "FOR SALE" WIRE CENTERS EXCLUDED FROM THE CALCULATION?

A. The deaveraged unbundled loop cost/rates are:

Zone 1 $17.45

Zone 2	$20.79
Zone 3	$33.84
Statewide Average	$20.81

Q. DOES QWEST SPONSOR ANY OTHER TELRIC STUDIES FOR RECURRING OR NONRECURRING UNE RATES IN PHASE II OF THIS DOCKET?

A. Qwest is not prepared to sponsor any TELRIC studies, other than those presented in this filing. However, as other issues are raised in this proceeding, upon determination of the Commission, Qwest will submit other recurring and nonrecurring studies as necessary.

V. CONCLUSION

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. Qwest has a right under the Telecom Act to seek recovery for the UNEs that it is required to provide to the CLECs. Qwest's TELRIC studies properly apply the FCC's TELRIC principles. For the issues included in Phase II of this docket, I have submitted recurring and nonrecurring TELRIC cost studies for UNEs for which rates have not been previously established. The Commission should set prices for unbundled network elements based on the TELRIC data summarized in the TELRIC Cost Summary Exhibits to my testimony.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

BEFORE THE ARIZONA CORPORATION COMMISSION

CARL J. KUNASEK
CHAIRMAN
JIM IRVIN
COMMISSIONER
WILLIAM A. MUNDELL
COMMISSIONER

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS.	]]]]]]	**DOCKET NO. T-00000A-00-0194**

EXHIBITS OF

TERESA K. MILLION

ON BEHALF OF

QWEST CORPORATION

OCTOBER 11, 2000

TESTIMONY EXHIBIT INDEX

EXHIBIT TKM-1	TELRIC Cost Summary – UNE Nonrecurring and Customer Transfer Charge
CONFIDENTIAL EXHIBIT TKM-2	Loop and Sub-loop De-averaging
EXHIBIT TKM-3	TELRIC Cost Summary – UNE Recurring
EXHIBIT TKM-4	TELRIC Cost Summary – Shared Transport
EXHIBIT TKM-5	Line Sharing – Shared Loop TELRIC Cost Summary – Line Sharing Collocation and OSS
EXHIBIT TKM-5A	Line Sharing Diagram
EXHIBIT TKM-6	TELRIC Cost Summary - Collocation
EXHIBIT TKM 6A	Collocation Diagram
EXHIBIT TKM 6B	TELRIC Cost Summary – Channel Regeneration
EXHIBIT TKM 6C	TELRIC Cost Summary – CLEC to CLEC Connection
EXHIBIT TKM-7	"Confidential and Proprietary" disk - Supporting cost studies and workpapers.

TELRIC COST SUMMARY
UNE NONRECURRING AND CUSTOMER TRANSFER CHARGE

Cost Element	TELRIC	Common	TELRIC + Common
Digital Capable Loops			
DS1 Capable Loop, Basic Installation (Existing Service), First Loop	$152.81	$7.31	$160.12
DS1 Capable Loop, Basic Installation (Existing Service), Each Add'l Loop	$122.83	$5.87	$128.70
DS1 Capable Loop, Basic Install with Performance Testing (New Service), First Loop	$309.12	$14.78	$323.90
DS1 Capable Loop, Basic Install with Performance Testing (New Service), Each Add'l Loop	$238.83	$11.42	$250.24
DS1 Capable Loop Coord. Install with Cooperative Testing, First Loop	$348.33	$16.65	$364.98
DS1 Capable Loop Coord. Install with Cooperative Testing, Each Add'l Loop	$258.68	$12.37	$271.05
DS1 Capable Loop Coord. Install without Testing (Existing Service), First Loop	$161.75	$7.73	$169.48
DS1 Capable Loop Coord. Install without Testing (Existing Service), Each Add'lLoop	$131.77	$6.30	$138.07
DS3 Capable Loop, Basic Installation (Existing Service), First Loop	$152.81	$7.31	$160.12
DS3 Capable Loop, Basic Installation (Existing Service), Each Add'l Loop	$122.83	$5.87	$128.70
DS3 Capable Loop, Basic Install with Performance Testing (New Service), First Loop	$309.12	$14.78	$323.90
DS3 Capable Loop, Basic Install with Performance Testing (New Service), Each Add'l Loop	$238.83	$11.42	$250.24
DS3 Capable Loop Coord. Install with Cooperative Testing, First Loop	$348.33	$16.65	$364.98
DS3 Capable Loop Coord. Install with Cooperative Testing, Each Add'l Loop	$258.68	$12.37	$271.05
DS3 Capable Loop Coord. Install without Testing (Existing Service), First Loop	$161.75	$7.73	$169.48
DS3 Capable Loop Coord. Install without Testing (Existing Service), Each Add'l Loop	$131.77	$6.30	$138.07
DS1 Feeder Sub-Loop			
DS1 Feeder Sub-Loop, First	$324.02	$15.49	$339.51
DS1 Feeder Sub-Loop, Each Additional	$254.30	$12.16	$266.46
Dark Fiber			
Dark Fiber, Per Occurrence, Per Route - First Fiber Pair	$552.95	$26.44	$579.38
Dark Fiber, Per Occurrence, Per Route - Each Additional Fiber Pair	$276.66	$13.23	$289.89
Optical Cross Connect - Per Fiber Pair Per Central Office (CO)	$21.15	$1.01	$22.16
Dark Fiber - Initial Records Inquiry CO To CO or CO To Customer Premise	$156.47	$7.48	$163.95
Dark Fiber - Mid-Span Splice/Structure Point Inquiry	$199.51	$9.54	$209.05
Dark Fiber - Field Verification and Quote Preparation	$1,457.18	$69.67	$1,526.85
Shared Loop, Per Loop, Per Order	$93.57	$4.47	$98.04
Customer Transfer Charge			
Customer Transfer Charge POTS, First Mechanized	$7.22	$0.35	$7.57
Customer Transfer Charge POTS, Each Additional Mechanized	$1.36	$0.06	$1.42
Customer Transfer Charge POTS, First Manual	$15.98	$0.76	$16.74
Customer Transfer Charge POTS, Each Additional Manual	$2.66	$0.13	$2.79
Customer Transfer Charge Private Line, First	$40.27	$1.93	$42.20
Customer Transfer Charge Private Line, Each Additional	$40.27	$1.93	$42.20
Customer Transfer Charge Advanced Communications Service, Per Circuit	$43.49	$2.08	$45.57

TELRIC COST SUMMARY
UNE NONRECURRING AND CUSTOMER TRANSFER CHARGE

Cost Element	TELRIC	Common	TELRIC + Common
UNE-Platform POTS			
UNE-Platform POTS, First Mechanized for Existing Service	$7.22	$0.35	$7.57
UNE-Platform POTS, Each Additional Mechanized for Existing Service	$1.36	$0.06	$1.42
UNE-Platform POTS, First Manual for Existing Service	$15.98	$0.76	$16.74
UNE-Platform POTS, Each Additional Manual for Existing Service	$2.66	$0.13	$2.79
UNE-Platform POTS, First Mechanized for New Service	$65.58	$3.14	$68.72
UNE-Platform POTS, Each Additional Mechanized for New Service	$16.86	$0.81	$17.67
UNE-Platform POTS, First Manual for New Service	$80.91	$3.87	$84.78
UNE-Platform POTS, Each Additional Manual for New Service	$18.17	$0.87	$19.04

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Qwest Corporation – TKM-2
Exhibits of Teresa K. Million
Pages 1 through 5
October 11, 2000

REDACTED

TELRIC COST SUMMARY
UNE RECURRING

Cost Element	TELRIC	Common	TELRIC + Common
Digital Capable Loops			
DS1 Capable Loop	$88.33	$4.22	$92.55
DS1 Feeder Loop	$77.69	$3.71	$81.40
DS3 Capable Loop	$979.09	$46.81	$1,025.90
Unbundled Dark Fiber			
Unbundled Dark Fiber Interoffice, Per Route Mile	$82.62	$3.95	$86.57
2 Fiber (or pair) Termination, Per Termination	$7.45	$0.36	$7.81
2 Fiber Cross Connection, Per Cross Connection	$4.14	$0.20	$4.34
Unbundled Dark Fiber - Per 2 Fiber Loop, Per Route	$112.50	$5.38	$117.87
2 Fiber Loop Termination, Per Termination at Wire Center	$6.80	$0.32	$7.12
2 Fiber loop Termination, Per Termination at Premise	$6.29	$0.30	$6.59
2 Fiber Cross Connection, Per Cross Connection	$4.14	$0.20	$4.34

TELRIC COST SUMMARY

SHARED TRANSPORT

Cost Element	TELRIC	Common	TELRIC + Common
Shared Transport, Per Minute of Use	$0.0011266	$0.0000225	$0.0011491

TELRIC COST SUMMARY
LINE SHARING - SHARED LOOP RECURRING

Shared Loop (Includes all wire centers)

	Recurring Price
Zone 1	$8.74
Zone 2	$10.00
Zone 3	$10.00

LINE SHARING COLLOCATION RECURRING AND NONRECURRING

Costs Per Line Sharing Application	TELRIC + Common Nonrecurring	TELRIC + Common Recurring
Engineering	$1,315.99	-
Total Engineering	**$1,315.99**	**-**

Splitter Configuration Options

Option 1A	TELRIC + Common Nonrecurring	TELRIC + Common Recurring
Option 1 - Splitter on the Splitter Bay: Cost Per Splitter and Cards (8 shelves)	$564.81	$5.81
Option 1A - Splitter on the Splitter Bay: Data Connections Direct to DLEC	$1,321.57	$1.71
Option 1A & 1B - Splitter on the Splitter Bay: Per Each Voice and Voice/Data Connections	$1,338.99	$1.74
Total Option 1A	**$4,564.36**	**$11.00**

Option 1B

Option 1 - Splitter on the Splitter Bay: Cost Per Splitter and Cards (8 shelves)	$564.81	$5.81
Option 1B - Splitter on the Splitter Bay: Data Connections to the 410 Block	$1,180.80	$1.53
Option 1A & 1B - Splitter on the Splitter Bay: Per Each Voice and Voice/Data Connections	$1,338.99	$1.74
Total Option 1B	**$4,423.58**	**$10.82**

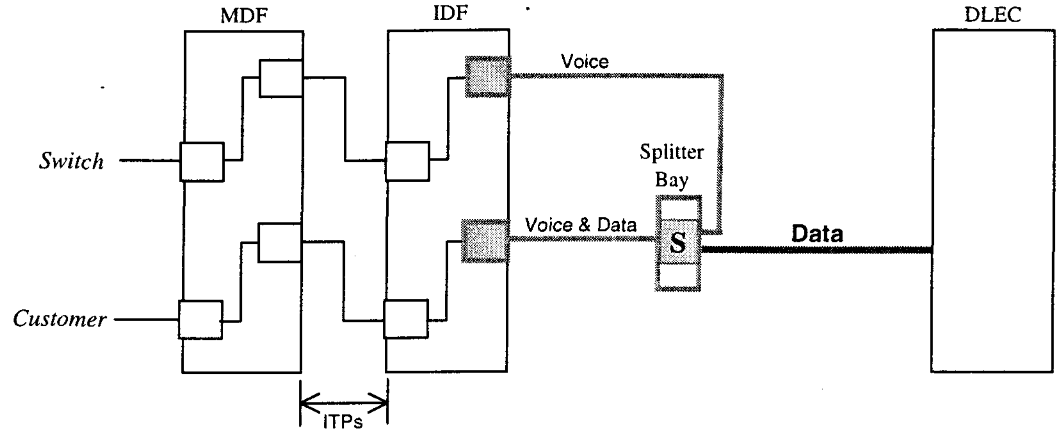
LINE SHARING COLLOCATION RECURRING AND NONRECURRING

Costs Per Line Sharing Application	TELRIC + Common Nonrecurring	TELRIC + Common Recurring
Option 2A		
Option 2A - Splitter on the IDF: Data Connections Direct to DLEC	$2,288.62	$2.97
Total Option 2A	**$2,288.62**	**$2.97**
Option 2B		
Option 2B - Splitter on the IDF: Data Connections to the 410 Block	$1,280.90	$1.66
Total Option 2B	**$1,280.90**	**$1.66**
Option 3A		
Option 3A - Splitter on the MDF: Data Connections Direct to DLEC	$2,686.92	$3.48
Total Option 3A	**$2,686.92**	**$3.48**
Option 3B		
Option 3B - Splitter on the MDF: Data Connections to the 410 Block	$1,310.82	$1.70
Total Option 3B	**$1,310.82**	**$1.70**

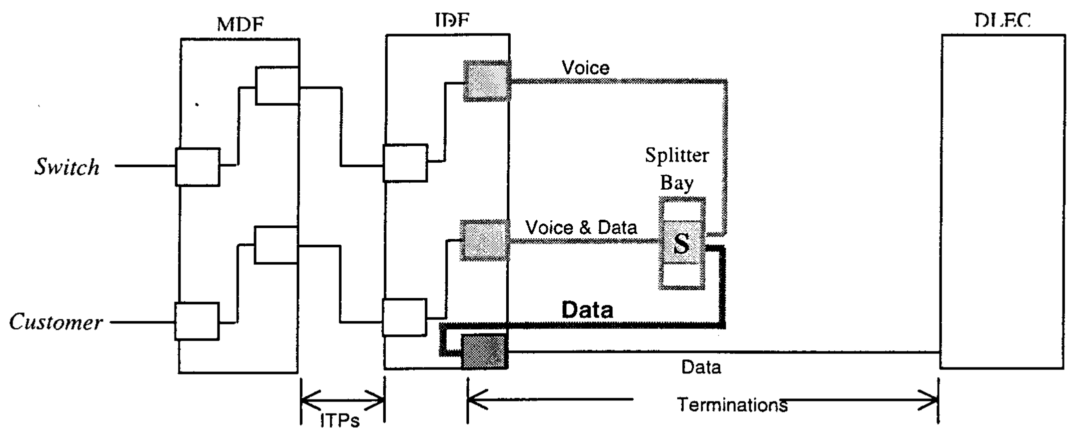
LINE SHARING OPERATIONAL SUPPORT SYSTEMS (OSS)

Line Sharing OSS, Monthly Cost Per Line	$3.20

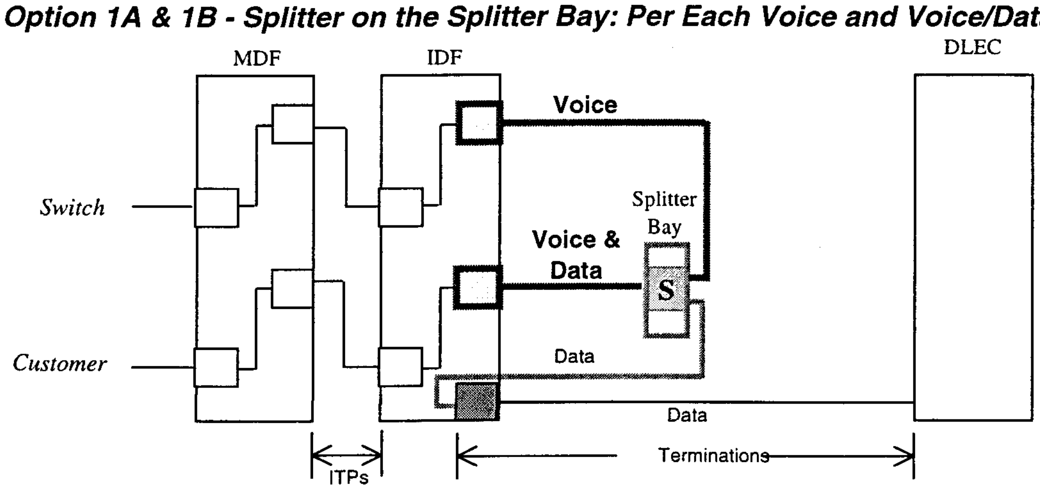
Option 1A - Splitter on the Splitter Bay: Data Connections Direct to DLEC



Option 1B - Splitter on the Splitter Bay: Data Connections to the 410 Block

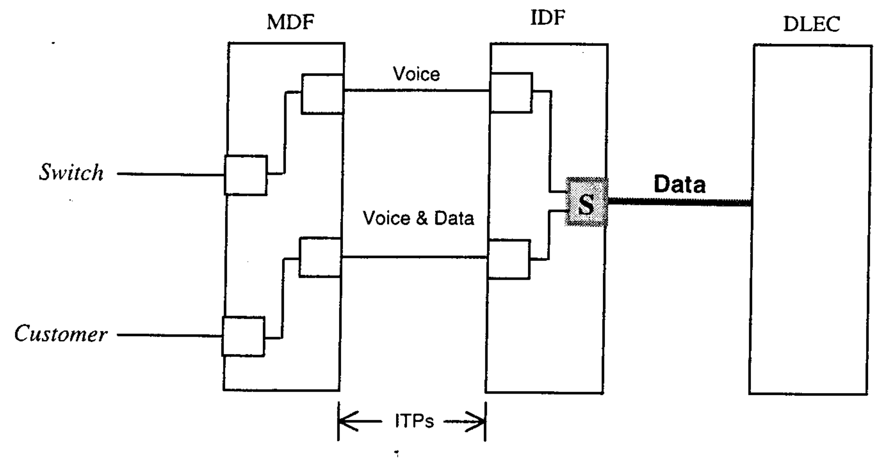


Option 1A & 1B - Splitter on the Splitter Bay: Per Each Voice and Voice/Data Connections

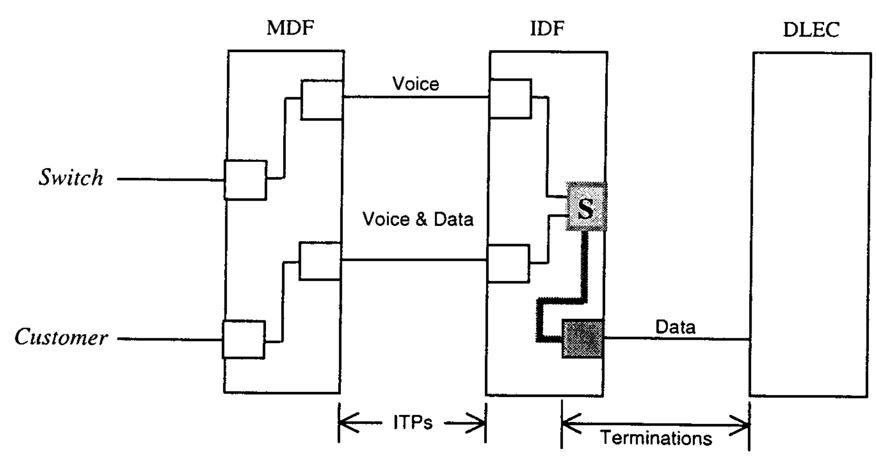


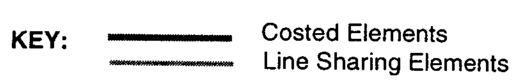
KEY: Costed Elements
Line Sharing Elements

Option 2A - Splitter on the IDF: Data Connections Direct to DLEC

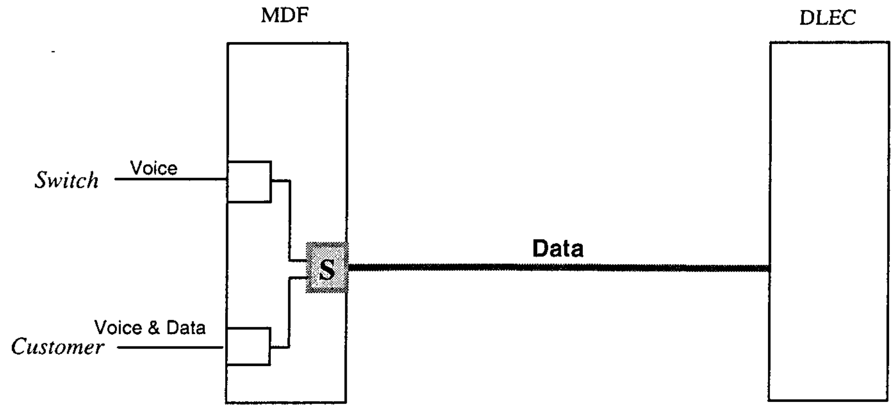


Option 2B - Splitter on the IDF: Data Connections to the 410 Block

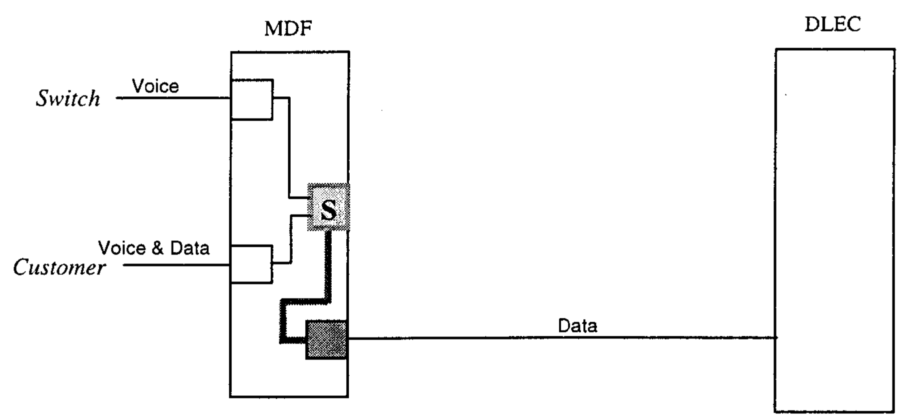




Option 3A - Splitter on the MDF: Data Connections Direct to DLEC



Option 3B - Splitter on the MDF: Data Connections to the 410 Block



KEY: Costed Elements
Line Sharing Elements

TELRIC COST SUMMARY
COLLOCATION RECURRING AND NONRECURRING

Cost Element	TELRIC	Common	TELRIC + Common
1 STANDARD COLLOCATION			
1.1 Terminations			
1.1.2 Terminations - 90 Day Installation			
DS0 - 90 Day Installation			
DS0 Cable Placement, per 100 Pair Block - 90 Day	$289.74	$13.85	$303.59
DS0 Cable Placement, per Termination - 90 Day	$5.44	$0.26	$5.70
DS0 Cable, per 100 Pair Block - 90 Day	$308.44	$14.75	$323.19
DS0 Cable, per Termination - 90 Day	$4.23	$0.20	$4.43
DS0 Blocks, per 100 Pair Block - 90 Day	$537.79	$25.71	$563.51
DS0 Blocks, per Termination - 90 Day	$7.37	$0.35	$7.72
DS0 Block Placement per 100 Pair Block - 90 Day	$295.30	$14.12	$309.42
DS0 Block Placement per Termination - 90 Day	$4.05	$0.19	$4.24
DS1 - 90 Day Installation			
DS1 Cable Placement per 28 DS1s - 90 Day	$428.78	$20.50	$449.28
DS1 Cable Placement per Termination - 90 Day	$46.11	$2.20	$48.31
DS1 Cable per 28 DS1s - 90 Day	$356.09	$17.02	$373.11
DS1 Cable per per Termination - 90 Day	$38.29	$1.83	$40.12
DS1 Panel per 28 DS1s - 90 Day	$406.31	$19.43	$425.74
DS1 Panel per Termination - 90 Day	$49.05	$2.35	$51.40
DS1 Panel Placement per 28 DS1s - 90 Day	$101.61	$4.86	$106.47
DS1 Panel Placement per Termination - 90 Day	$10.93	$0.52	$11.45
DS3 - 90 Day Installation			
DS3 Cable per Termination - 90 Day	$205.31	$9.82	$215.13
DS3 Cable Placement per Termination - 90 Day	$229.94	$10.99	$240.94
DS3 Connector per Termination - 90 Day	$236.92	$11.33	$248.25
DS3 Connector Placement per Termination - 90 Day	$32.75	$1.57	$34.31
1.1.3 Terminations - Monthly Charge			
DS0 - Monthly Charge			
DS0 Cable Placement per 100 pair per month	$0.57	$0.03	$0.60
DS0 Cable Placement per Termination per month	$0.01	$0.00	$0.01
DS0 Cable per 100 pair per month	$0.61	$0.03	$0.63
DS0 Cable per Termination per month	$0.01	$0.00	$0.01
DS0 Blocks per 100 pair per month	$1.06	$0.05	$1.11
DS0 Blocks per Termination per month	$0.01	$0.00	$0.02
DS0 Block Placement per 100 pair per month	$0.58	$0.03	$0.61
DS0 Block Placement per Termination per month	$0.01	$0.00	$0.01

TELRIC COST SUMMARY
COLLOCATION RECURRING AND NONRECURRING

Cost Element	TELRIC	Common	TELRIC + Common
DS1 - Monthly Charge			
DS1 Cable Placement per 28 DS1s per month	$0.53	$0.03	$0.55
DS1 Cable Placement per Termination per month	$0.06	$0.00	$0.06
DS1 Cable per 28 DS1s per month	$0.44	$0.02	$0.46
DS1 Cable per per Termination per month	$0.05	$0.00	$0.05
DS1 Panel per 28 DS1s per month	$0.50	$0.02	$0.53
DS1 Panel per Termination per month	$0.06	$0.00	$0.06
DS1 Panel Placement per 28 DS1s per month	$0.13	$0.01	$0.13
DS1 Panel Placement per Termination per month	$0.01	$0.00	$0.01
DS3 - Monthly Charge			
DS3 Cable Placement per Termination per month	$0.25	$0.01	$0.27
DS3 Cable per Termination per month	$0.28	$0.01	$0.30
DS3 Connector per Termination per month	$0.29	$0.01	$0.31
DS3 Connector Placement per Termination per month	$0.04	$0.00	$0.04
1.2 Entrance Facility			
1.2.1 Entrance Facility - 90 Day Installation			
Standard Shared Per Fiber	$1,214.82	$58.08	$1,272.89
Cross Connect per Fiber	$1,320.18	$63.12	$1,383.30
Express per Cable	$8,654.34	$413.75	$9,068.09
1.2.2 Entrance Facility - Monthly Charge			
Standard Shared Per Fiber per month	$14.70	$0.70	$15.41
Cross Connect per Fiber per month	$14.80	$0.71	$15.50
Express per Cable per month	$232.09	$11.10	$243.19
1.3 Cable Splicing - 90 Day Installation			
Setup	$467.78	$22.36	$490.15
Per fiber Spliced	$37.40	$1.79	$39.18
1.4 Power Usage			
1.4.1 Power Plant per Amp Ordered			
Power Plant per Amp Ordered	$10.78	$0.52	$11.30
Power Usage-Less than 60 AMPS per Amp Ordered	$3.63	$0.17	$3.81
Power Usage-More than 60 AMPS per Amp Ordered	$7.26	$0.35	$7.61
1.4.2 Backup AC Power Feed Usage - Monthly Charges			
120 V per Amp per Month	$18.70	$0.89	$19.60
208 V, Single Phase per Amp per Month	$32.42	$1.55	$33.97
208 V, Three Phase per Amp per Month	$56.08	$2.68	$58.76
240 V, Single Phase per Amp per Month	$37.40	$1.79	$39.19
240 V, Three Phase per Amp per Month	$64.71	$3.09	$67.80
480 V, Three Phase per Amp per Month	$129.42	$6.19	$135.60

TELRIC COST SUMMARY
COLLOCATION RECURRING AND NONRECURRING

Cost Element	TELRIC	Common	TELRIC + Common
1.4.3 Backup AC Power Cable - 90 Day Installation			
20 Amp, Single Phase - Initial Charge per Foot	$7.86	$0.38	$8.24
20 Amp, Three Phase - Initial Charge per Foot	$9.75	$0.47	$10.22
30 Amp, Single Phase - Initial Charge per Foot	$8.48	$0.41	$8.89
30 Amp, Three Phase - Initial Charge per Foot	$11.65	$0.56	$12.20
40 Amp, Single Phase - Initial Charge per Foot	$9.97	$0.48	$10.45
40 Amp, Three Phase - Initial Charge per Foot	$13.72	$0.66	$14.38
50 Amp, Single Phase - Initial Charge per Foot	$11.83	$0.57	$12.39
50 Amp, Three Phase - Initial Charge per Foot	$16.52	$0.79	$17.31
60 Amp, Single Phase - Initial Charge per Foot	$13.38	$0.64	$14.02
60 Amp, Three Phase - Initial Charge per Foot	$19.01	$0.91	$19.92
100 Amp, Single Phase - Initial Charge per Foot	$16.56	$0.79	$17.35
100 Amp, Three Phase - Initial Charge per Foot	$25.86	$1.24	$27.10
1.4.4 Backup AC Power Cable - Monthly Charges			
20 Amp, Single Phase per Foot per Month	$0.01	$0.00	$0.01
20 Amp, Three Phase per Foot per Month	$0.01	$0.00	$0.01
30 Amp, Single Phase per Foot per Month	$0.01	$0.00	$0.01
30 Amp, Three Phase per Foot per Month	$0.01	$0.00	$0.02
40 Amp, Single Phase per Foot per Month	$0.01	$0.00	$0.01
40 Amp, Three Phase per Foot per Month	$0.02	$0.00	$0.02
50 Amp, Single Phase per Foot per Month	$0.01	$0.00	$0.02
50 Amp, Three Phase per Foot per Month	$0.02	$0.00	$0.02
60 Amp, Single Phase per Foot per Month	$0.02	$0.00	$0.02
60 Amp, Three Phase per Foot per Month	$0.02	$0.00	$0.02
100 Amp, Single Phase per Foot per Month	$0.02	$0.00	$0.02
100 Amp, Three Phase per Foot per Month	$0.03	$0.00	$0.03
1.5 Security			
Access Card per Employee	$0.85	$0.04	$0.90
Card Access Per Person per Office per Month	$8.00	$0.38	$8.38
1.6 Central office Clock Synchronization			
C O Clock Synchronization per Port	$7.31	$0.35	$7.66
1.7 Interconnection Tie Pair			
DS0 Per Connection	$0.51	$0.02	$0.53
DS1 Per Connection	$1.53	$0.07	$1.60
DS3 Per Connection	$15.17	$0.73	$15.90

TELRIC COST SUMMARY
COLLOCATION RECURRING AND NONRECURRING

Cost Element	TELRIC	Common	TELRIC + Common
SPACE CONSTRUCTION - GENERAL			
2 CAGELESS COLLOCATION			
2.1 Space Construction			
2.1.2 Space Construction - 90 Day Installation			
Space Construction for 2 Bays and 1 - 40A Power Feed - 90 Day	$29,851.99	$1,427.18	$31,279.17
Space Construction Adjustment for 20A Initial Power Feed - 90 Day	-$2,145.70	-$102.58	-$2,248.29
Space Construction Adjustment for 30A Initial Power Feed - 90 Day	-$1,369.38	-$65.47	-$1,434.84
Space Construction Adjustment for 60A Initial Power Feed - 90 Day	$1,879.86	$89.87	$1,969.73
Space Construction Adjustment for Each Additional Bay - 90 Day	$3,117.82	$149.06	$3,266.88
Space Construction Adjustment for Each Additional 20A Power Feed - 90 Day	$5,447.43	$260.43	$5,707.86
Space Construction Adjustment for Each Additional 30A Power Feed - 90 Day	$6,223.76	$297.55	$6,521.30
Space Construction Adjustment for Each Additional 40A Power Feed - 90 Day	$7,593.13	$363.02	$7,956.15
Space Construction Adjustment for Each Additional 60A Power Feed - 90 Day	$9,472.99	$452.89	$9,925.88
2.1.3 Space Monthly Charge			
Space Monthly Charge for 2 Bays and 1 - 40A Power Feed per Month	$36.87	$1.76	$38.63
Space Monthly Charge Adjustment for 20A Initial Power Feed per Month	-$2.65	-$0.13	-$2.78
Space Monthly Charge Adjustment for 30A Initial Power Feed per Month	-$1.69	-$0.08	-$1.77
Space Monthly Charge Adjustment for 60A Initial Power Feed per Month	$2.32	$0.11	$2.43
Space Monthly Charge Adjustment for Each Additional Bay per Month	$3.85	$0.18	$4.03
Space Monthly Charge Adjustment for Each Additional 20A Power Feed per Month	$6.73	$0.32	$7.05
Space Monthly Charge Adjustment for Each Additional 30A Power Feed per Month	$7.69	$0.37	$8.05
Space Monthly Charge Adjustment for Each Additional 40A Power Feed per Month	$9.38	$0.45	$9.83
Space Monthly Charge Adjustment for Each Additional 60A Power Feed per Month	$11.70	$0.56	$12.26
2.2 Rent			
Rent per Square Foot	$3.91	$0.19	$4.09
2.3 Quote Preparation Fee - Cageless Construction			
Quotation Preparation Fee	$4,316.46	$206.36	$4,522.82
3 CAGED COLLOCATION			
3.1 Space Construction			
3.1.1 Space Construction - 90 Day Installation			
Cage-Up to 100 Sq Ft - 90 Day	$51,437.77	$2,459.16	$53,896.93
Cage-101 Sq Ft to 200 Sq Ft - 90 Day	$53,357.86	$2,550.95	$55,908.82
Cage-201 Sq Ft to 300 Sq Ft - 90 Day	$54,850.96	$2,622.34	$57,473.30
Cage-301 Sq Ft to 400 Sq Ft - 90 Day	$56,722.10	$2,711.79	$59,433.89

TELRIC COST SUMMARY
COLLOCATION RECURRING AND NONRECURRING

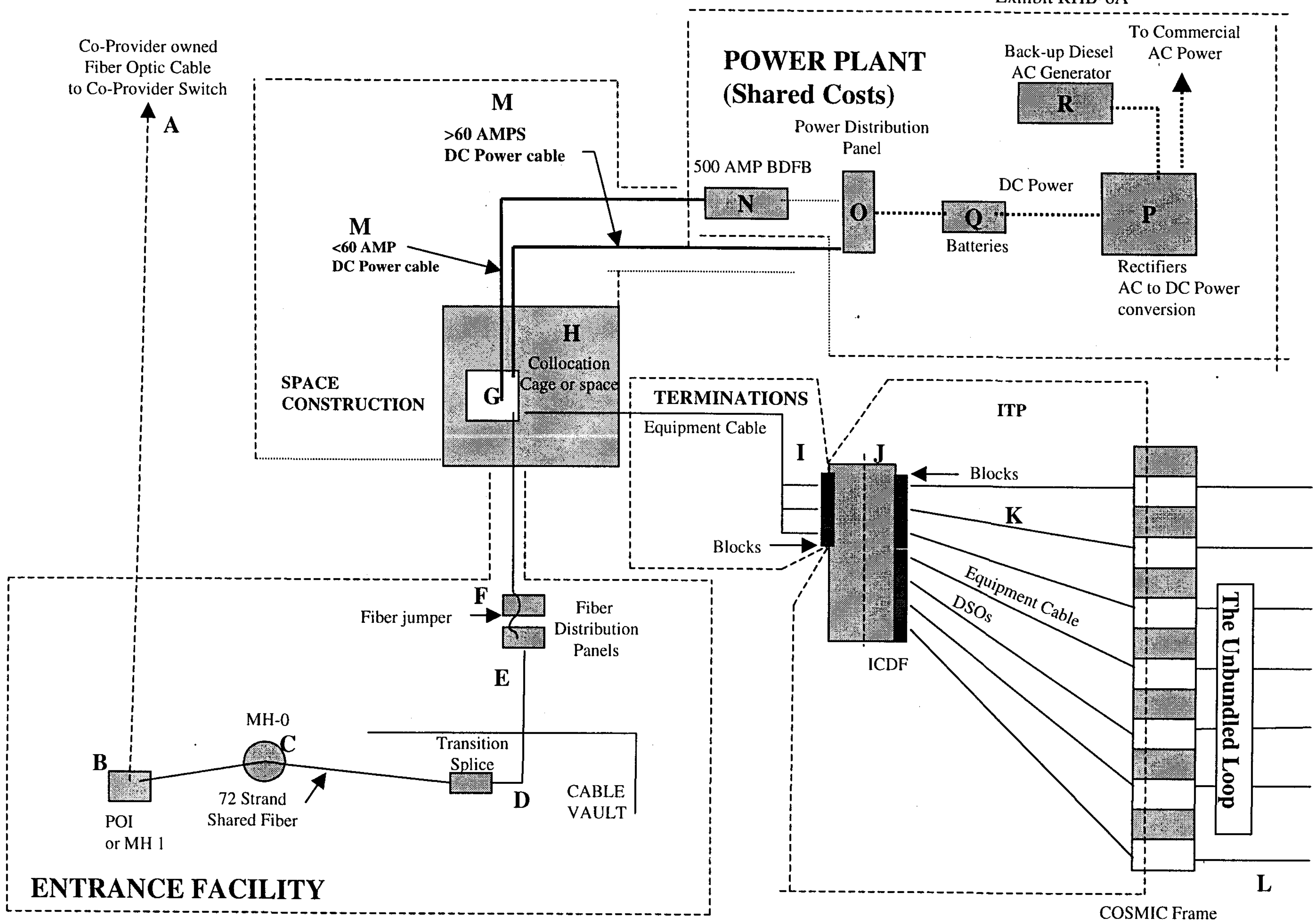
Cost Element	TELRIC	Common	TELRIC + Common
3.1.2 Initial Power Feed Adjustments - 90 Day			
Space Construction Adjustment for 20A Initial Power Feed - 90 Day	-$8,320.70	-$397.80	-$8,718.50
Space Construction Adjustment for 30A Initial Power Feed - 90 Day	-$7,575.29	-$362.16	-$7,937.45
Space Construction Adjustment for 40A Initial Power Feed - 90 Day	-$6,016.88	-$287.66	-$6,304.54
Space Construction Adjustment for 100A Initial Power Feed - 90 Day	$9,211.16	$440.37	$9,651.53
Space Construction Adjustment for 200A Initial Power Feed - 90 Day	$29,406.49	$1,405.88	$30,812.37
Space Construction Adjustment for 300A Initial Power Feed - 90 Day	$53,953.73	$2,579.44	$56,533.18
Space Construction Adjustment for 400A Initial Power Feed - 90 Day	$82,985.00	$3,967.38	$86,952.38
3.1.3 Each Additional Power Feed Adjustments - 90 Day			
Space Construction Adjustment for Each Additional 20A Power Feed - 90 Day	$6,871.63	$328.52	$7,200.15
Space Construction Adjustment for Each Additional 30A Power Feed - 90 Day	$7,617.05	$364.16	$7,981.20
Space Construction Adjustment for Each Additional 40A Power Feed - 90 Day	$9,175.45	$438.66	$9,614.12
Space Construction Adjustment for Each Additional 60A Power Feed - 90 Day	$15,192.33	$726.32	$15,918.65
Space Construction Adjustment for Each Additional 100A Power Feed - 90 Day	$24,403.49	$1,166.69	$25,570.18
Space Construction Adjustment for Each Additional 200A Power Feed - 90 Day	$44,598.83	$2,132.20	$46,731.02
Space Construction Adjustment for Each Additional 300A Power Feed - 90 Day	$69,146.07	$3,305.76	$72,451.83
Space Construction Adjustment for Each Additional 400A Power Feed - 90 Day	$98,177.33	$4,693.70	$102,871.03
3.1.4 Space Monthly Charge			
Cage-Up to 100 Sq Ft Monthly Charge	$63.53	$3.04	$66.56
Cage-101 Sq Ft to 200 Sq Ft Monthly Charge	$65.90	$3.15	$69.05
Cage-201 Sq Ft to 300 Sq Ft Monthly Charge	$67.74	$3.24	$70.98
Cage-301 Sq Ft to 400 Sq Ft Monthly Charge	$70.05	$3.35	$73.40
3.1.5 Initial Power Feed Monthly Charge Adjustments			
Space Monthly Charge Adjustment for 20A Initial Power Feed	-$10.28	-$0.49	-$10.77
Space Monthly Charge Adjustment for 30A Initial Power Feed	-$9.36	-$0.45	-$9.80
Space Monthly Charge Adjustment for 40A Initial Power Feed	-$7.43	-$0.36	-$7.79
Space Monthly Charge Adjustment for 100A Initial Power Feed	$11.38	$0.54	$11.92
Space Monthly Charge Adjustment for 200A Initial Power Feed	$36.32	$1.74	$38.05
Space Monthly Charge Adjustment for 300A Initial Power Feed	$66.63	$3.19	$69.82
Space Monthly Charge Adjustment for 400A Initial Power Feed	$102.49	$4.90	$107.39
3.1.6 Each Additional Power Feed Monthly Charge Adjustments			
Space Monthly Charge Adjustment for Each Additional 20A Power Feed	$8.49	$0.41	$8.89
Space Monthly Charge Adjustment for Each Additional 30A Power Feed	$9.41	$0.45	$9.86
Space Monthly Charge Adjustment for Each Additional 40A Power Feed	$11.33	$0.54	$11.87
Space Monthly Charge Adjustment for Each Additional 60A Power Feed	$18.76	$0.90	$19.66
Space Monthly Charge Adjustment for Each Additional 100A Power Feed	$30.14	$1.44	$31.58
Space Monthly Charge Adjustment for Each Additional 200A Power Feed	$55.08	$2.63	$57.71
Space Monthly Charge Adjustment for Each Additional 300A Power Feed	$85.40	$4.08	$89.48
Space Monthly Charge Adjustment for Each Additional 400A Power Feed	$121.25	$5.80	$127.05

TELRIC COST SUMMARY
COLLOCATION RECURRING AND NONRECURRING

Cost Element	TELRIC	Common	TELRIC + Common
3.2 Grounding			
Grounding - 90 Day Installation			
#2 AWG per Foot - 90 Day	$12.41	$0.59	$13.00
1/0 AWG per Foot - 90 Day	$20.65	$0.99	$21.64
4/0 AWG per Foot - 90 Day	$23.46	$1.12	$24.58
350 KCMIL per Foot - 90 Day	$32.55	$1.56	$34.11
500 KCMIL per Foot - 90 Day	$36.27	$1.73	$38.01
750 KCMIL per Foot - 90 Day	$55.57	$2.66	$58.23
Grounding - Monthly Charge			
#2 AWG per Foot Monthly Charge	$0.02	$0.00	$0.02
1/0 AWG per Foot Monthly Charge	$0.03	$0.00	$0.03
4/0 AWG per Foot Monthly Charge	$0.03	$0.00	$0.03
350 KCMIL per Foot Monthly Charge	$0.04	$0.00	$0.04
500 KCMIL per Foot Monthly Charge	$0.04	$0.00	$0.05
750 KCMIL per Foot Monthly Charge	$0.07	$0.00	$0.07
3.3 Rent			
Rent per Square Foot	$3.91	$0.19	$4.09
3.4 Quote Preparation Fee - Caged Construction			
Quotation Preparation Fee - Caged Construction	$4,693.24	$224.38	$4,917.62
4 VIRTUAL COLLOCATION			
4.1 Equipment Bay			
Equipment Bay per Shelf	$3.56	$0.17	$3.73
4.2 Labor			
Maintenance - Regular Business Hours Per 1/2 Hour	$27.56	$1.32	$28.88
Maintenance - Outside Regular Business Hours Per 1/2 Hour	$36.88	$1.76	$38.65
Training - Regular Business Hours Per 1/2 Hour	$27.56	$1.32	$28.88
Inspector - Regular Business Hours Per 1/2 Hour	$31.43	$1.50	$32.93
Inspector - Outside Regular Business Hours Per 1/2 Hour	$40.47	$1.93	$42.40
Installation - Regular Business Hours Per 1/2 Hour	$31.43	$1.50	$32.93
Installation - Outside Regular Business Hours Per 1/2 Hour	$40.47	$1.93	$42.40
Engineering - Regular Business Hours Per 1/2 Hour	$29.74	$1.42	$31.16
Engineering - Outside Regular Business Hours Per 1/2 Hour	$38.39	$1.84	$40.23
4.3 Quote Preparation Fee - Virtual			
Quotation Preparation Fee - Virtual	$4,316.46	$206.36	$4,522.82

Arizona Corporation Commission
Docket No. T-00000A-00-0194
Direct Testimony of Teresa K. Million
Exhibit RHB-6A

COLLOCATION CONFIGURATION



- **ENTRANCE FACILITY**
- "A" - Co-Provider Fiber.
- "B" - POI utility hole or Manhole 1
- "C" - MH-0 - The first utility hole outside the central office. A shared 72 strand fiber cable is placed between the POI and VAULT passing through this utility hole. The 72 strand is broken out into 6 - 12 strand compliments
- "D" - Transition point - The black sheath cable must be spliced within 50 ft of the entrance to fire rated cable prior to entering the central office environment.
- "E & F" - Fiber Distribution Panel is the point in the office where the Qwest shared fiber connects to the fiber that extends into the Co-Provider's collocation space.
- **SPACE CONSTRUCTION**
- "G" - The Co-Provider's telecommunications equipment
- "H" - The Co-Provider's collocation caged structure or cageless space
- "M"- Power Cables
- **TERMINATIONS**
- "I" - The equipment cables and terminating blocks. CLECs have test access at this point
- **ITP**
- "J" - The IDF, COSMIC and DSX frames ,cables and terminating blocks and cable racking. Qwest test point for trouble isolation on a UNE
- "K" - Tie cable connecting the ICDF to the COSMIC.
- "L" - USW COSMIC frame.
- **POWER PLANT**
- "N" - Battery distribution fuse board (BDFB) - Power leads of amperage < 60 AMPS used to power equipment bays.
- "O" - Power Distribution Board - Power leads > 60 AMPS used to power equipment bays and feed for the BDFBs
- "P" - Rectifiers -AC TO DC power conversion
- "Q" - Batteries used for dc backup power
- "R" - Diesel AC generator - Used to back-up the batteries if the commercial power should fail

POWER PLANT

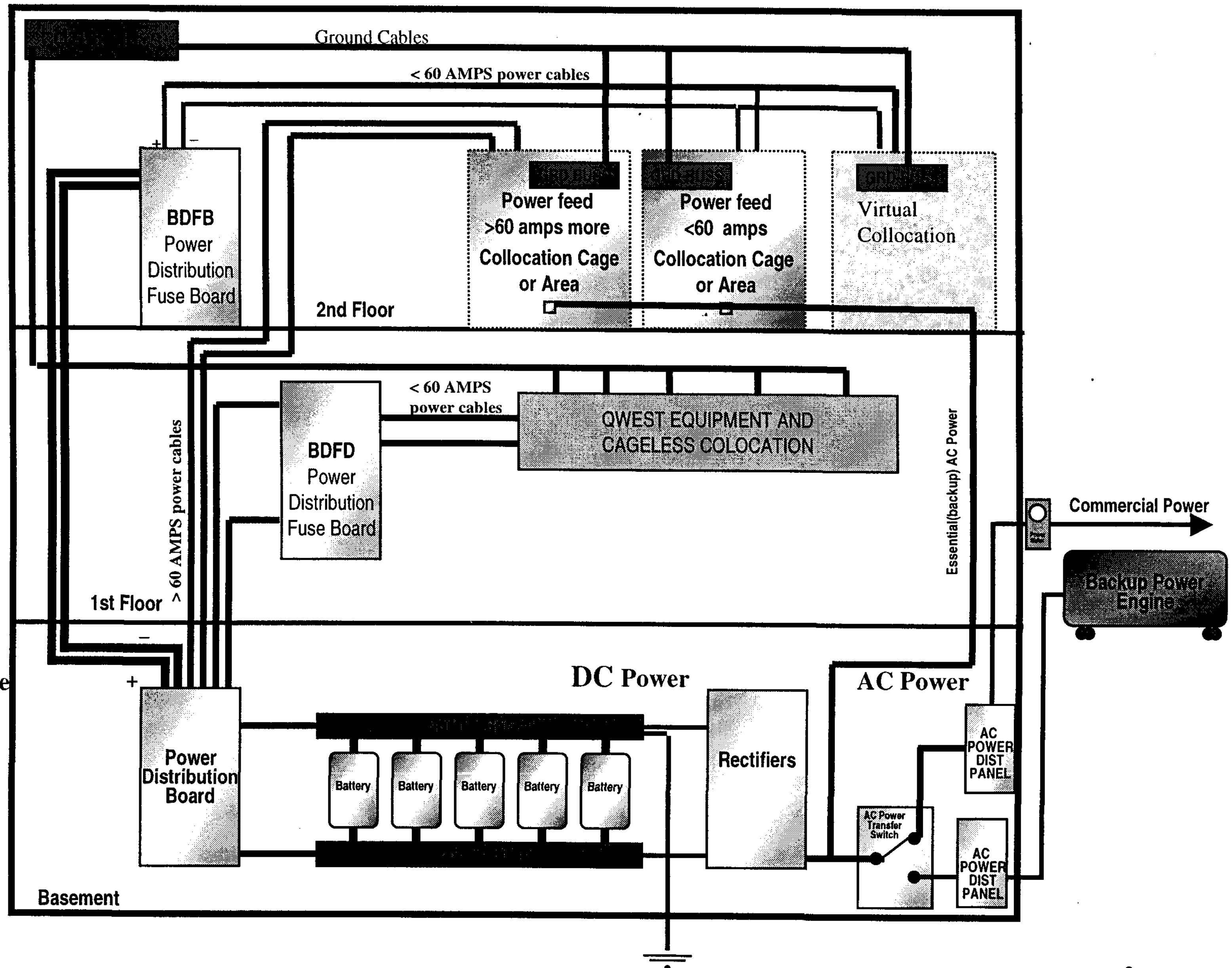
Power Plant

Recurring
AC generator
BDFB
PDB
Batteries
Power usage
Rectifiers
Ground Buss
AC Power Usage

Non-recurring

DC Power Cable
Grounding Cable
AC Essential Pwr Cable

Note
AC convenience outlets included in Cage Space



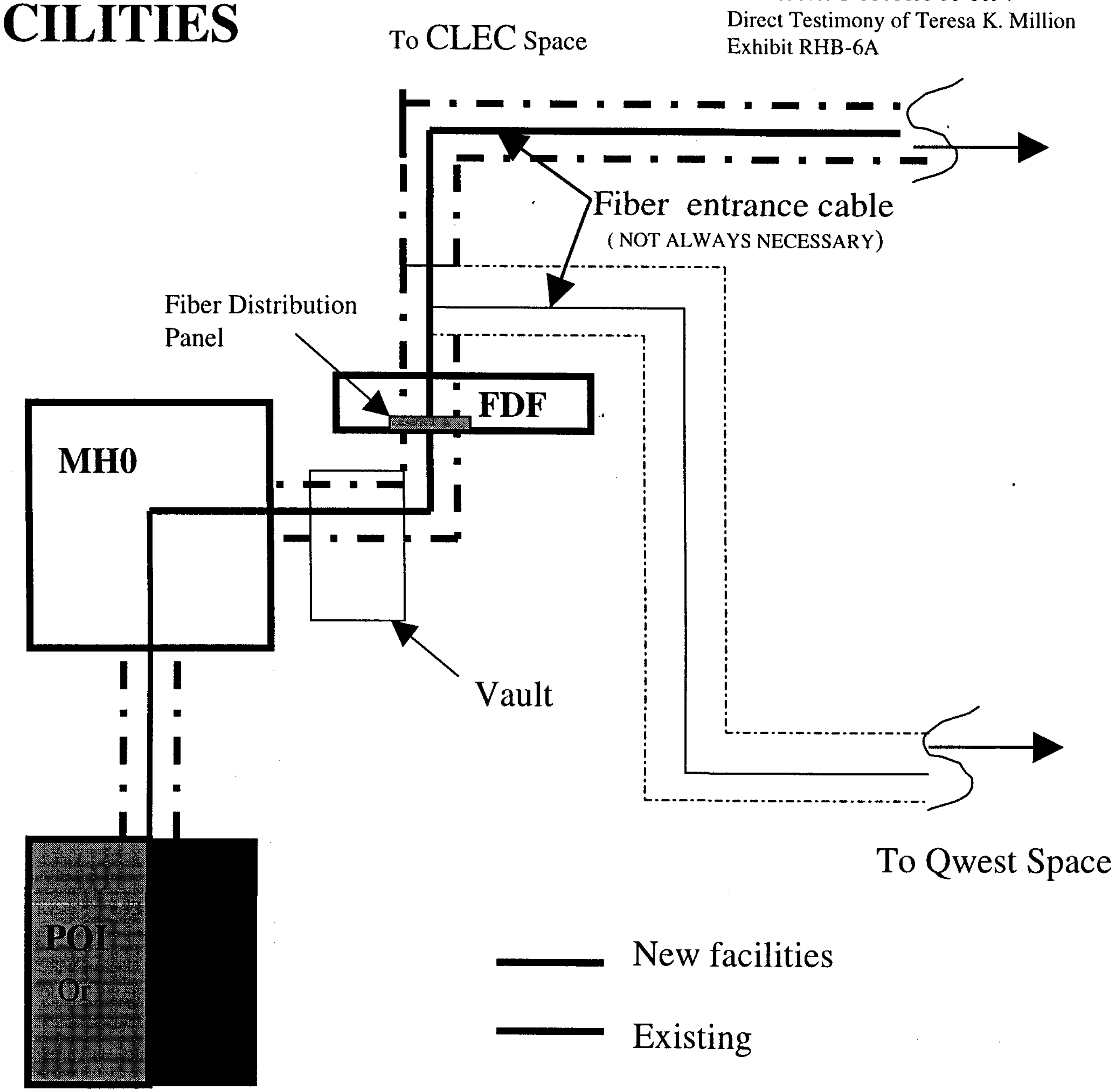
ENTRANCE FACILITIES

Non Recurring

Utility Hole (New)
Fiber splicing and testing
Single fiber jumper
Cable Racking (New)
Cable Placement
Cable (Fiber)
Fiber Placement
Conduit / Innerduct /
Riser (New)
Fiber Distribution Panel

Recurring

Utility Hole (Existing)
Conduit / Innerduct /
Riser (Existing)
Fiber Distribution Frame
Cable Rack (Existing)
Maintenance



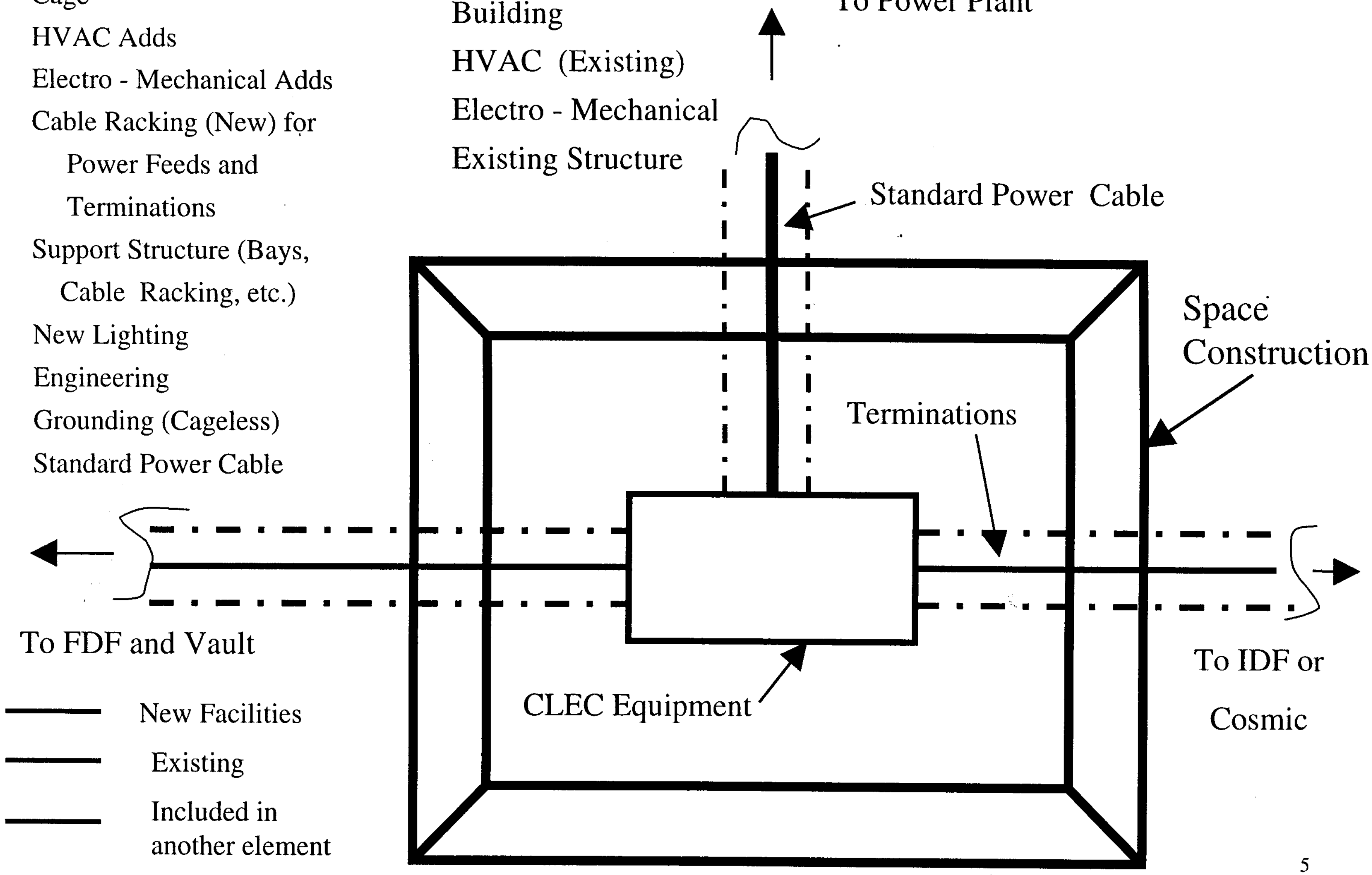
Space Construction

<u>Non Recurring</u>

Cage
HVAC Adds
Electro - Mechanical Adds
Cable Racking (New) for
  Power Feeds and
  Terminations
Support Structure (Bays,
  Cable Racking, etc.)
New Lighting
Engineering
Grounding (Cageless)
Standard Power Cable

<u>Recurring</u>

Building
HVAC (Existing)
Electro - Mechanical
Existing Structure



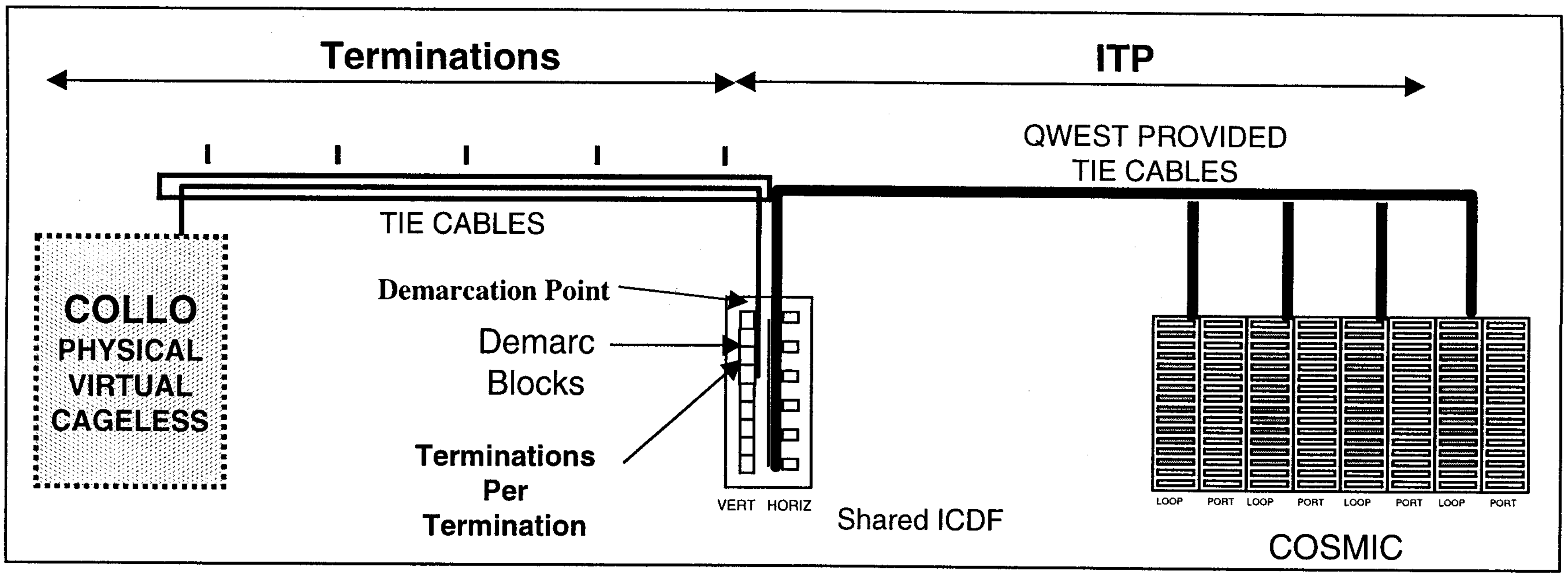
TERMINATIONS

Non-recurring
Blocks/Panel
Cable

ITP (Interconnection Tie Pair)

Recurring
Intermediate Frame
COSMIC Frame (DS0)
DSX Frame (DS1, DS3)
Blocks
Cable
Cable Racking
Meld Run

DSO Example



TELRIC COST SUMMARY
CHANNEL REGENERATION

Cost Element	TELRIC	Common	TELRIC + Common
Regeneration Recurring			
DS1 Regeneration	$9.18	$0.27	$9.44
DS3 Regeneration	$33.34	$0.96	$34.31
Regeneration Nonrecurring			
DS1 Regeneration	$472.80	$22.60	$495.41
DS3 Regeneration	$1,781.39	$85.17	$1,866.55

TELRIC COST SUMMARY
COLLOCATION - CLEC TO CLEC CONNECTIONS

Cost Element	TELRIC + Common
CLEC TO CLEC CONNECTIONS	
CLEC to CLEC Quote Preparation Fee, Nonrecurring	$1,052.79
Flat Charge (Design Engineering & Installation - NO CABLES), Nonrecurring	$3,770.95
Cable Racking , Recurring	
DS0, Per Foot, Per Month	$0.14
DS1, Per Foot, Per Month	$0.15
DS3, Per Foot, Per Month	$0.12
Virtual Connections (if applicable - Connections only; NO CABLES), Nonrecurring	
DS0, Per 100 Connections	$272.99
DS1, Per 28 Connections	$121.34
DS3, Per 1 Connection	$12.72
Cable Hole (if applicable)	$439.82

Note: CLEC/DLEC must supply and place cables.
No cable material or placement costs are included.

REDACTED

BEFORE THE ARIZONA CORPORATION COMMISSION

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	**DOCKET NO. T-00000A-00-0194** **AFFIDAVIT OF TERESA K. MILLION**
STATE OF COLORADO	)	
COUNTY OF DENVER	)	

Teresa K. Million, of lawful age being first duly sworn, depose and states:

1. My name is Teresa K. Million. I am Director – Service Costs of Qwest Corporation in Denver, Colorado. I have caused to be filed written testimony and exhibits in support of Qwest Corporation in Docket No. T-00000A-00-0194.

2. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge and belief.

Further affiant sayeth not.

Teresa K. Million
Teresa K. Million

SUBSCRIBED AND SWORN to before me this 5th day of October, 2000.

Jennifer Peppers
Notary Public residing at
Denver, Colorado

My Commission Expires: May 17, 2003

JENNIFER PEPPERS
NOTARY PUBLIC
STATE OF COLORADO

BEFORE THE ARIZONA CORPORATION COMMISSION

CARL J. KUNASEK
CHAIRMAN
JIM IRVIN
COMMISSIONER
WILLIAM A. MUNDELL
COMMISSIONER

IN THE MATTER OF INVESTIGATION	)
INTO QWEST CORPORATION'S	)
COMPLIANCE WITH CERTAIN	) DOCKET NO. T-00000A-00-0194
WHOLESALE PRICING REQUIREMENTS	)
FOR UNBUNDLED NETWORK ELEMENTS	)
AND RESALE DISCOUNTS	)

DIRECT TESTIMONY OF

WILLIAM E. TAYLOR, Ph.D.

SENIOR VICE PRESIDENT
NATIONAL ECONOMIC RESEARCH ASSOCIATES, INC.

ON BEHALF OF

QWEST CORPORATION

October 11, 2000

n/e/r/a
Consulting Economists

DIRECT TESTIMONY OF WILLIAM E. TAYLOR, Ph.D.

INDEX OF TESTIMONY

I. INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME, OCCUPATION, AND BUSINESS ADDRESS.

A. My name is William E. Taylor. I am Senior Vice President of National Economic Research Associates, Inc. ("NERA"), head of its Communications Practice, and head of its Cambridge office located at One Main Street, Cambridge, Massachusetts 02142.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL, PROFESSIONAL, AND BUSINESS EXPERIENCE.

A. I have been an economist for over twenty-five years. I earned a Bachelor of Arts degree from Harvard College in 1968, a Master of Arts degree in Statistics from the University of California at Berkeley in 1970, and a Ph.D. from Berkeley in 1974, specializing in Industrial Organization and Econometrics. For the past twenty-five years, I have taught and published research in the areas of microeconomics, theoretical and applied econometrics, which is the study of statistical methods applied to economic data, and telecommunications policy at academic and research institutions. Specifically, I have taught at the Economics Departments of Cornell University, the Catholic University of Louvain in Belgium, and the Massachusetts Institute of Technology. I have also conducted research at Bell Laboratories and Bell Communications Research, Inc.

I have participated in telecommunications regulatory proceedings before several state public service commissions including the Arizona Corporation

Commission ("Commission"). In addition, I have filed testimony before the Federal Communications Commission ("FCC") and the Canadian Radio-television Telecommunications Commission on matters concerning incentive regulation, price cap regulation, productivity, access charges, local competition, interLATA competition, interconnection and pricing for economic efficiency. Recently, I was chosen by the Mexican Federal Telecommunications Commission and Telefonos de Mexico ("Telmex") to arbitrate the renewal of the Telmex price cap plan in Mexico.

I have also testified on market power and antitrust issues in federal court. In recent work years, I have studied—and testified on—the competitive effects of mergers among major telecommunications firms and of vertical integration and interconnection of telecommunications networks.

Finally, I have appeared as a telecommunications commentator on PBS Radio and on The News Hour with Jim Lehrer. My curriculum vita is attached as Exhibit WET-1.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I have been asked by Qwest Corporation ("Qwest") to provide an economist's perspective on the issue of inter-carrier compensation for Internet-bound traffic.

III. SUMMARY OF TESTIMONY

Q. PLEASE SUMMARIZE YOUR POSITION ON INTER-CARRIER COMPENSATION FOR INTERNET-BOUND TRAFFIC.

A. My position on that issue is summarized as follows:

1. Regardless of whether Internet-bound calls are *jurisdictionally* local or interstate, the correct economic perspective on inter-carrier compensation is based on the principle of cost causation. According to that principle, reciprocal compensation should not be paid by the originating incumbent local exchange carrier ("ILEC") for Internet-bound calls. Instead, the Internet service provider ("ISP") should compensate that carrier (and any other carrier that switches the Internet-bound call) for the end-to-end cost caused by the ISP customer, and recover that cost directly from the ISP customer.
2. The economic role of the ISP is not that of an end-user (of a serving competitive local exchange carrier or "CLEC") but rather that of a carrier. Therefore, like the IXC that pays carrier access charges to partially defray the cost of a long distance call, the ISP should ideally pay analogous access-like usage-based charges to defray costs incurred by other carriers on its behalf to switch an Internet-bound call. That form of inter-carrier compensation would be economically efficient.
3. Internet-bound calls may resemble local voice calls in some respects but that resemblance can be deceptive for purposes of determining the appropriate form of inter-carrier compensation. There are substantive differences between how costs arise for the two types of traffic. The cost causation principle should determine how cost should be recovered for Internet-bound traffic, i.e., who should pay and who should receive compensation.
4. Reciprocal compensation payments (from the ISP customer's originating ILEC to the CLEC that ultimately switches the call to the ISP) are likely to generate an inefficient subsidy for Internet use, distort the local exchange market, and generate unintended arbitrage opportunities for CLECs. Such compensation creates opportunities for CLECs to specialize in serving ISPs with the sole aim of accumulating reciprocal compensation revenues.
5. Besides Arizona, five other states (Massachusetts, New Jersey, South Carolina, Louisiana, and Colorado) have thus far determined that the payment of reciprocal compensation by ILECs originating Internet-bound calls be stopped. Massachusetts and Louisiana regulators, in particular, noted that by encouraging arbitrage opportunities, the reciprocal compensation regime of inter-carrier compensation for Internet-bound calls subverts real local exchange competition. In addition to recognizing these ill effects, the Colorado

Commission applied the economic analysis outlined in this testimony and concluded that reciprocal compensation should not be paid for Internet-bound traffic.

6. The preferred form of inter-carrier compensation for Internet-bound traffic is the payment of access-like usage-based charges by the ISP to the ILEC and the CLEC. Because the FCC currently exempts ISPs from paying access charges, the next-best cost-causative form of compensation would be an equitable sharing (between the ILEC and the CLEC) of revenues earned by the CLEC from the lines that it sells to the ISP. This form of revenue sharing may not be sufficient for the ILEC and CLEC that jointly provide access service to fully recover their costs, but the degree to which they under-recover those costs (or, equivalently, subsidize Internet service) would be in the same proportion as their respective costs and, *hence*, competitively neutral. Bill-and-keep, or reciprocal compensation at a zero rate, is not a cost-causative form of compensation, but neither is it as distortive as reciprocal compensation at a positive rate. Bill-and-keep can be a third-best and reasonable interim form of compensation for Internet-bound traffic. Because it is not based on cost causation, reciprocal compensation at a positive rate should not be an option at all.

IV. INTER-CARRIER COMPENSATION FOR INTERNET-BOUND CALLS

A. Economic Principles for Determining Inter-Carrier Compensation for Internet-Bound Traffic

Q. WHAT IS THE PROPER BASIS FOR SELECTING THE FORM OF INTER-CARRIER COMPENSATION THAT IS APPROPRIATE FOR INTERNET-BOUND TRAFFIC?

A. Regardless of the precise jurisdictional status of Internet-bound calls (i.e., whether they are interstate, local, or something else), the proper application of economic principles holds the key to determining what form of compensation is appropriate for Internet-bound calls, and who should compensate whom.

Q. PLEASE EXPLAIN THE PRINCIPLE OF COST CAUSATION AND ITS RELEVANCE TO COST RECOVERY.

A. The fundamental economic principle underlying all pricing and cost recovery mechanisms should be cost causation. The principle asks two questions: (1) who or what has caused the cost in question (cost source)? and (2) how much is the cost in question (requisite level of cost recovery)? According to this principle, having identified the source of the cost, it is economically efficient to recover the entire cost directly from that source. This linkage between cost recovery and the cost source stands on its own, and makes no reference whatsoever to the distribution of benefits. That is, even if an activity provides benefits to others besides the cost-causer, it is efficient to recover that cost fully from its source and not from incidental beneficiaries.

Consumers determine what and how much to buy on the basis of prices they pay. Their act of buying also causes cost. To ensure that society's scarce resources are put to their best use, and that only the goods and services of highest value to society are produced and consumed, consumers (cost-causers) must be made to pay prices that fully reflect the costs they cause. Application of the cost causation principle thus leads to prices that fully recover costs and, at the same time, ensure that consumption occurs—and resources are used—efficiently.

Q. WHAT DOES THE COST CAUSATION PRINCIPLE IMPLY ABOUT THE NATURE OF THE RELATIONSHIP BETWEEN THE END-USER THAT MAKES

AN INTERNET-BOUND CALL AND THE ISP THAT PROVIDES INTERNET ACCESS FOR THAT CALL?

A. Cost causation implies that the relationship between the end-user (making an Internet-bound call) and the ISP is analogous to that between the end-user (making a long distance call) and an IXC. In fact, regardless of the exact jurisdictional status of Internet calls, there are sound *economic* reasons to require that the ISP pay charges to the ILEC and/or CLEC that are similar to the access charges paid by IXCs to the ILEC for all long distance calls carried.

Q. PLEASE EXPLAIN WHY COST CAUSATION IMPLIES THAT ANALOGY.

A. Suppose I am a Qwest subscriber for local service and an Earthlink customer for Internet traffic. Suppose further that Earthlink obtains access service (i.e., receives Internet-bound traffic) from a CLEC, say Sprint. When I place an Internet-bound call through my computer, what costs are incurred and what revenue sources are available to cover those costs? Switching and transmission costs are straightforward: Qwest carries the call from my computer to its point of connection ("POC") with Sprint,[1] Sprint carries the call to Earthlink, and Earthlink performs protocol conversion and sends the call out into the Internet. Revenue to cover these costs comes from three sources: I pay a regulated price for residential local exchange service to Qwest, and a competitively-determined price for ISP services

[1] A POC is a point at which the carrier serving the ISP (which may be a CLEC) delivers an Internet-bound call to the ISP.

to Earthlink. Earthlink pays Sprint a price for network access service[2] (but is exempted by the FCC from having to pay access charges, a matter I discuss below).

Two economic propositions are important in determining who should pay what to whom in this circumstance:

1. When I dial the access number for Earthlink, I am acting as a customer of Earthlink to which I pay a monthly access fee, even though the call is facilitated by the originating ILEC (Qwest) and the co-carrier CLEC (Sprint) serving the ISP.
2. Earthlink performs the economic functions of a carrier—or an ESP—that routes the Internet call through the backbone network to its final destination. Earthlink performs standard carrier functions such as transport and routing, as well as maintains leased facilities within the backbone network.

Under these assumptions, an Internet-bound call is identical in function to an interstate long distance call where the IXC collects the revenue from the cost-causing end-user and pays all the other carriers necessary to complete the call.

The principle of cost causation implies that, *for the purposes of an Internet call*, I am properly viewed as an Earthlink customer placing an Internet-bound call, not a Qwest customer placing a local call. Qwest and Sprint simply provide access-like functions to help the Internet call on its way, just as they might provide originating or terminating carrier access to help an IXC carry an interstate long distance call. Therefore, because the economic relationship is analogous to ILEC-IXC interconnection (access), rather than to ILEC-CLEC interconnection (local), the efficient form of inter-carrier compensation is for the ISP to compensate its serving

[2] In view of Sprint's acquisition of Earthlink, I assume the payment here is of an internal transfer price.

LEC, which, in turn, shares that compensation with any co-carriers that have incurred costs in handling the call.

B. Comparison of Alternative Inter-Carrier Compensation Mechanisms

Q. WHAT IS THE ECONOMICALLY EFFICIENT FORM OF INTER-CARRIER COMPENSATION FOR INTERNET-BOUND CALLS IMPLIED BY THE COST CAUSATION PRINCIPLE?

A. When end-users place Internet-bound calls from within a LEC's network but must purchase an ISP's service to gain access to the Internet, the economically efficient form of inter-carrier compensation implied by cost causation takes the form of access-like usage-based charges paid by the ISP to the ILEC (which originates the Internet-bound call) and the CLEC (that delivers that call to the ISP). The ISP can then recover those payments through the fee for Internet access it charges the end-user.

Q. DO ISPs PAY CHARGES ANALOGOUS TO CARRIER ACCESS TODAY?

A. No. The FCC has only taken the first step towards establishing the jurisdictional status of Internet-bound traffic and the form of inter-carrier compensation that should apply to it.[3] However, no rulemaking has yet occurred at the FCC to

[3] FCC, *In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996 and Inter-Carrier Compensation for Internet-bound Traffic*, CC Docket Nos. 96-98 and 99-68, Declaratory Ruling in CC Docket No. 96-98 and Notice of Proposed Rulemaking in CC Docket No. 99-68 ("*Internet Traffic Order*"), released February 26, 1999.

establish such charges for ISPs, and the D.C. Circuit Court of Appeal's recent decision calls into question when such rulemaking will occur.[4] In the meantime, ISPs remain beneficiaries of an exemption from paying interstate carrier access charges that has been granted to ESPs since 1983.

Q. WHAT RATIONALE HAS THE FCC USED TO JUSTIFY THE ESP EXEMPTION?

A. The FCC has generally argued that the ESP exemption was necessary to protect fledgling information service providers from the effects of per-minute charges: i.e.,

> to protect certain users of access services, such as ESPs, that had been paying the generally much lower business service rates from the rate shock that would result from immediate imposition of carrier access charges.[5]

Whether 15 years is adequate to dissipate potential rate shock is an interesting economic question but one that is beside the point, as the FCC and Congress have made it abundantly clear that no per-minute charge will be assessed on ISPs.

Q. GIVEN THAT ACCESS-LIKE CHARGES ARE RULED OUT AS A PRACTICAL MATTER, WHAT FORM HAS INTER-CARRIER COMPENSATION FOR INTERNET-BOUND CALLS TRADITIONALLY TAKEN?

[4] The United States Court of Appeals for the District of Columbia vacated the *Internet Traffic Order* in a decision issued March 24, 2000. (Bell Atlantic v. FCC, No. 99-1094, D.C. Cir., March 24, 2000). In doing so, the court remanded the case back to the FCC for further explanation of its conclusion that Internet-bound traffic is predominately interstate. In response to the court's decision, the FCC's Common Carrier Bureau Chief observed that the ruling does not alter his view that ISP traffic is interstate but, instead, requires the FCC to provide further explanation of that conclusion. (*TR Daily*, March 24, 2000)

[5] *Internet Traffic Order*, ¶5, and FCC, *In Re: MTS and WATS Market Structure*, CC Docket No. 78-72, Memorandum Opinion and Order ("*MTS/WATS Order*"), 1983, at ¶715.

A. There is a history of states adopting reciprocal compensation, which first arose in the context of the exchange of local voice traffic, for the exchange of Internet-bound traffic as well. In recent years, however, at least six states—including Arizona—have declared their opposition to reciprocal compensation for Internet-bound traffic. With federal policy on this issue now in limbo because of the remand back to the FCC, states have to increasingly rely on their own resources and understanding of the issues to determine inter-carrier compensation policy. This proceeding represents an opportunity for the Commission to revisit that policy, particularly in light of its recent decision to adopt bill-and-keep, rather than reciprocal compensation, for Internet-bound traffic.[6] Besides Arizona, Colorado has also recently adopted bill-and-keep as the preferred policy, given that compensation may not take the form of access charges.[7]

Q. DOES COST CAUSATION SUPPORT RECIPROCAL COMPENSATION FOR INTERNET-BOUND CALLS?

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[6] Arizona Corporation Commission, *In the Matter of the Petition of Sprint Communications Company, L.P. for Arbitration of Interconnection Terms, Conditions and Related Arrangements with U S WEST Communications, Inc.*, Docket Nos. T-02432B-00-0026 and T-01051B-00-0026, Decision No. 62650, adopted June 13, 2000.

[7] Colorado Public Utilities Commission, *In the Matter of the Petition of Sprint Communications Company, L.P. for Arbitration Pursuant to U.S. Code § 252(B) of the Telecommunications Act of 1996 to Establish an Interconnection Agreement with U S WEST Communications, Inc.*, Docket No. 00B-011T, Initial Commission Decision ("*Colorado ISP Order*"), adopted May 3, 2000. Also see Colorado Public Utilities Commission, Decision Denying Application for Rehearing, Reargument, or Reconsideration, Docket No. 00B-011T, adopted June 7, 2000.

A. No, inter-carrier compensation in the form of reciprocal compensation is not economically efficient for Internet-bound calls. Reciprocal compensation is economically justified only for local *voice* traffic, where:

1. the ILEC subscriber acts as a customer of the local originating ILEC,[8] purchasing local exchange service out of the ILEC's tariff, and
2. the call terminates at a local exchange end-user, i.e., a party that does not receive revenue from the originating end-user for carrying the call.

In the example above, when I place my Internet-bound call, I am acting as a customer of Earthlink. Although the portion of my Internet call that lies entirely within the circuit-switched network, i.e., up to the ISP, *resembles* a local voice call, its economic function is very different, since the ISP is not simply a passive end-user recipient of my call.[9] Rather, Earthlink has designed, marketed and sold me the service I am using, collected my monthly fee for Internet access, answered my questions, established telephone numbers at which I can access its services without paying toll charges and paid Sprint for access to the public switched

[8] I distinguish here between a "subscriber" and a "customer" in order to show cost causation. I subscribe to my local carrier in order to have *access* to the public switched network, but I act as a customer of that local carrier in order to *use* Call Waiting service or of a long distance carrier in order to *use* interstate long distance service. When I am a customer of the local carrier, I cause usage-sensitive costs for that carrier. Similarly, I cause costs for the long distance carrier when I use *its* long distance service.

[9] This point has been made very clearly by the Louisiana Public Service Commission. In becoming the fourth state regulatory agency to deny the payment of reciprocal compensation for Internet-bound traffic, the Louisiana Commission stated:

> There is no prevailing industry custom of treating ISP traffic as "local" for reciprocal compensation purposes. FCC regulations require that ISPs be treated as end users *for only one purpose, the access charge exemption.*

Louisiana Public Service Commission, *In re Petition of KMC Telecom, Inc. Against BST to Enforce Reciprocal Compensation Provisions of the Parties' Interconnection Agreement*, Order in Docket No. U23839 ("*Louisiana ISP Compensation Order*"), October 13, 1999, at 13.

telephone network. Thus, the same subscriber that acts in the capacity of a customer of the originating ILEC when making a local voice call, acts in the capacity of a customer of the ISP when making an Internet-bound call. This situation is not an unfamiliar one: it is exactly analogous to the subscriber acting in the capacity of a customer of an IXC when making a long distance call.

Q. PLEASE EXPLAIN THE CONTRAST BETWEEN THESE TWO "MODELS" OF INTER-CARRIER COMPENSATION IN MORE DETAIL.

A. ***ILEC-CLEC Interconnection Model.*** When a Qwest subscriber places a local voice call that terminates to a CLEC subscriber, what functions does Qwest perform? Obviously, it originates the call by providing dialtone, local switching, and transport to the CLEC's point of interconnection. In addition, Qwest has marketed the service to its subscriber (and customer of local calls) and, under regulatory direction, determined both price level and structure and other terms and conditions under which the customer makes the call. Qwest will determine if the call has been completed, bill and collect from the customer for the call (if measured service applies) or for flat-rate service, and answer questions regarding the bill or the service. The story is precisely symmetric if the originating party is a CLEC customer and Qwest or another CLEC terminates the call.

Thus, under ILEC-CLEC interconnection, the originating subscriber is the cost-causer and a customer of the originating ILEC. That originating ILEC charges its cost-causing customer for the entire end-to-end call and compensates the CLEC that terminates the call. The originating ILEC's network costs plus the compensation it pays is—in theory—recovered from the local call charge it levies on its (originating) customer. The terminating CLEC's costs are recovered from the compensation payment it receives from the originating ILEC. In this arrangement, both parties recover their costs, and the cost-causer is (again, in principle) billed for the entire cost he or she causes both carriers to incur. Thus, this arrangement is not an arbitrary regulatory or legal construction: for local interconnection between an ILEC and a CLEC, it makes economic sense. It would arise spontaneously in unregulated competitive markets where the ILEC serving the originating subscriber acts effectively as its agent in making necessary network and financial arrangements with a CLEC to terminate the call, just as General Motors purchases goods or services from Ford or Bendix to include in an automobile purchased by a General Motors customer.

ILEC-IXC Interconnection Model. In contrast, when a Qwest subscriber places a long distance call using, e.g., AT&T, Qwest's function is limited to recognizing the carrier code (or implementing presubscription in its switch) and switching and transporting the call to AT&T's point of presence. While, at some level, the functions its network performs are similar to those used to deliver local traffic to a CLEC[10], the economic functions are very different. It is AT&T that has marketed the service to its customer and determined both the price level and structure and other terms and conditions of the call. AT&T will send, explain, and

[10] Qwest supplies the customer's loop and provides dialtone, local switching, and transport to AT&T's point of presence.

collect the bill from the customer or lose the revenue if it cannot. Thus, under ILEC-IXC interconnection, the originating subscriber is, from an economic perspective, the customer of the IXC, not the originating ILEC.

When an ILEC (or CLEC) subscriber places long distance calls, he acts as a cost-causing customer of the IXC. The ILEC subscriber, acting as an IXC customer, causes costs at various points in the networks involved: for the ILECs/CLECs that originate and terminate the long distance call, as well as for the IXC that transports it between local exchanges. The IXC receives revenue from the customer which it uses, in turn, to pay originating and terminating access charges to the ILECs/CLECs involved and to cover its own network and administration costs. In effect, the IXC acts as its customer's agent in assembling the necessary local exchange components of the call. The ILECs/CLECs involved recover their costs from access charges. Thus, in principle, the cost-causing customer faces a price that reflects all of the costs the call engenders, and all parties that incur costs to provision the call have a claim on the cost-causer's payment.

From an economic perspective, ILEC-IXC interconnection and ILEC-CLEC interconnection have both important similarities and differences. In both cases, the originating ILEC subscriber is the cost-causer and pays the supplier for the end-to-end service. The major difference is that in the ILEC-CLEC local interconnection regime, the cost-causing ILEC subscriber is also a customer of the originating ILEC for local service, while in the ILEC-IXC regime, that cost-causing subscriber acts as a customer of the IXC for long distance service.

Q. FROM AN ECONOMIC PERSPECTIVE, WHY DOES ILEC-CLEC-ISP INTERCONNECTION RESEMBLE THAT BETWEEN THE ILEC AND THE IXC BUT NOT THAT BETWEEN THE ILEC AND THE CLEC?

A. The question at issue is: when multiple ILECs/CLECs combine to deliver traffic to an ISP, are they interconnecting in an ILEC-CLEC local interconnection regime or an ILEC-IXC interstate access regime? The FCC has characterized the link from an end-user to an ISP as an *interstate* access service and, absent other considerations, ISPs would be subject to charges analogous to interstate access charges. As far back as 1983, the FCC concluded that ESPs (which, today, would include ISPs) are "among a variety of users of access service" in that they "obtain local exchange services or facilities which are used, in part or in whole, for the purpose of completing interstate calls."[11]

The service provided by an ISP exists to enable that ISP's customers to access information and information-related services stored on special computers or web servers at various locations around the world. The ISP typically facilitates such access by selling a flat-rated monthly or yearly Internet access service that, in most cases, calls for that ISP customer to make a local or toll-free call in order to reach the ISP's modems. Besides price, ISPs compete on the extent of geographic coverage, specifically, the number of local calling areas they can offer to ISP customers as possible POCs, as well as on various components of service

[11] *MTS/WATS Order.*

quality including provision of specialized information services. The ISP markets directly to the originating ILEC's subscriber, attempting to maximize its number of customers and the amount of traffic *incoming* to it by publishing and advertising as many local calling numbers (at its POCs) as possible, and doing everything within its power to help the potential customer avoid having to incur per-minute or toll charges to have Internet access. If necessary, ISPs may use foreign exchange ("FX") lines to haul Internet traffic from considerable distances while still offering service to the ISP customer for the price of a local call.[12] Some ISPs offer 800 service for their customers to access their network when flat-rate local calling is unavailable, although there are some which impose a per-minute charge on the subscriber for such access. Some ISPs maintain Internet gateways for their customers and earn revenue from advertisers that depend more or less directly on the number of customers and the number of times its customers access advertised sites. The ISP bills its customers for their access and usage, and stands to lose money if it cannot collect from them. From an economic perspective, then, the party that causes the cost associated with Internet-bound traffic is the originating ILEC's subscriber who acts in the capacity of an ISP customer. In this sense,

[12] In that respect, the implicit contract is analogous to that which exists between a party with a toll-free "800" telephone number and other parties that are invited to call that number. The holder of the 800 number causes cost by signaling others to call him or her and accepts that cost by being willing to pay for it. Moreover, the holder of the 800 number may control the number of potential callers by choosing the method for disclosing the number (e.g., directory information, word of mouth, special invitation, etc.). Similarly, ISPs that use FX lines to provide local connectivity to distant customers signal a willingness to accept—and pay for—the generally higher cost of providing Internet access to those customers. They too can control the number of potential ISP customers by choosing both how many
(continued...)

Internet-bound traffic has the same characteristics as IXC-bound traffic in the ILEC-IXC regime and has characteristics opposite to CLEC-bound traffic in the ILEC-CLEC local interconnection regime.

Q. ARE THERE DIFFERENCES BETWEEN AN IXC-BOUND CALL AND AN INTERNET-BOUND CALL?

A. A theoretical difference is that an ILEC subscriber that places a long distance call does not incur a local usage charge on the originating end, while an ISP customer, in principle, does. As a practical matter, however, this difference is irrelevant. Flat and measured basic local exchange rates have *not* been set to reflect the added cost of serving Internet-bound traffic, and a longstanding public policy concern with the level of basic exchange rates limits the ability of the regulator to recover these costs from all local exchange customers.[13] In addition, ISPs compete, in part, by providing local exchange numbers so that their customers can reach them without incurring per-minute charges from the serving ILEC or CLEC. Because Internet-bound traffic is caused by the ISP's customer, the ISP would generally bear the cost of the local connection, just as the IXC does for long distance traffic. And, in fact, competitive forces in the ISP market have encouraged ISPs to incur costs and

(...continued)

points of connection to offer for providing local connectivity and pricing options for its Internet access service.

[13] Indeed, because the longer holding times of Internet-bound traffic impose costs different from those for ordinary voice traffic, raising prices for all local exchange customers to recover costs imposed by the ISP's customers would constitute a subsidy to ISP access. ILECs that originate Internet-bound (continued...)

lease facilities so that their customers do not pay additional local exchange costs. For both of these reasons, it would be naïve to think that the originating ILEC's subscriber fully compensates that ILEC for the end-to-end cost of the Internet-bound call.[14]

Thus, I conclude that the ILEC should not be required to pay reciprocal compensation (or, a call "termination" charge) to CLECs for Internet calls by the ILEC subscriber, i.e., the ILEC-CLEC local interconnection regime should not apply for such calls. Instead, I conclude that the ISP should pay the ILEC (and the CLEC that also serves it) usage charges analogous to carrier access charges paid by IXCs, i.e., the ILEC-IXC interconnection regime should apply. Only such a payment would close the gap between the full cost of the call up to the ISP and the local call charge that is assessed to the end-user by the originating ILEC. In this economically correct view of inter-carrier compensation, the CLEC that switches Internet calls for the ISP is compensated not from reciprocal compensation paid by the originating ILEC but from charges paid by the ISP. Moreover, this economically correct perspective does *not* depend on the exact jurisdictional status of the ISP-directed call.

(...continued)

traffic would effectively charge ISP customers less than incremental cost and ordinary voice customers more than otherwise for local exchange usage.

[14] This problem is likely to be even more acute when the ILEC's subscriber pays flat-rated local charges rather than per-call rates for local service.

Q. HOW DOES THE RATIONALE FOR THE ESP EXEMPTION FROM ACCESS-LIKE CHARGES APPLY TO THE INTER-CARRIER COMPENSATION ISSUE CURRENTLY BEFORE THIS COMMISSION?

A. If per-minute reciprocal compensation were required, ILECs would be in roughly the same position as the ESPs were when the exemption went into effect. Under reciprocal compensation, ILECs would have to pay the per-minute cost of transport and termination for Internet-bound traffic to CLECs that disproportionately serve ISPs. Where ESPs were thought to be unable to recover those costs from their customers because a per-minute charge would discourage use of the new technology, ILECs are similarly likely to be unable to recover those costs from their own subscribers. This is particularly likely when state regulators are reluctant to increase basic exchange rates to *all* customers in order to recover the cost increases that are caused only by the subset of dial-up Internet customers.

Second, when ISPs are served by CLECs, ILECs experience an additional net cost from reciprocal compensation. To understand why, consider that reciprocal compensation for local voice traffic is based on the ILEC's unit termination cost for that traffic. The same compensation rate applies to both the ILEC and the CLEC *even if* the CLEC's own unit termination cost is different from that of the ILEC. What would be the effect of extending the same compensation mechanism to Internet-bound traffic? The ILEC's unit termination cost for *local voice* traffic—to which the compensation rate is pegged—would very likely be *higher* than the CLEC's unit cost to deliver Internet-bound traffic to the ISP.[15] This fact is crucial because the cost that the ILEC actually avoids (by having the CLEC deliver Internet-bound traffic to the ISP instead) would then be lower than its own unit termination cost for local voice traffic and, hence, the compensation rate it has to pay. As a result, the ILEC would pay more (even significantly so) in reciprocal compensation than the costs they would avoid from the CLEC delivering Internet-bound traffic to the ISP. To recover this additional cost directly, the ILEC may be compelled to bill its own subscribers for the difference, but *only* if those subscribers are also customers of the ISP that is served by the CLEC. When the ISP is served by the ILEC instead, subscribers of that ILEC would not generate additional costs from reciprocal compensation and thus should not have to pay for them.

The bottom line is that dial-up customers of CLEC-served ISPs impose more cost on ILECs than dial-up customers of ILEC-served ISPs. However, while there may be a cost justification for charging local subscribers differently depending on which local exchange carriers serve their ISPs, in reality such differential pricing is unlikely to be practical or politically acceptable.

Thus, under reciprocal compensation for Internet calls, the ILEC is in the very position from which the ESP exemption was designed to protect ESPs: subject to a per-minute cost for which it has no practical mechanism for recovery. Ironically, the fact that the ILEC has no ability to recover the costs of reciprocal

[15] I explain below why this may be so.

compensation from the cost-causer is sometimes touted as an advantage of the plan. However, creating a new, additional implicit subsidy in ILEC local exchange rates is hardly wise public policy just as local exchange competition begins to accelerate.

Q. SOME OBSERVERS CLAIM THAT INTERNET-BOUND TRAFFIC AND LOCAL VOICE TRAFFIC ARE "FUNCTIONALLY IDENTICAL" BECAUSE THEY USE THE SAME NETWORK COMPONENTS. DOES THIS CLAIM JUSTIFY APPLYING RECIPROCAL COMPENSATION TO INTERNET-BOUND TRAFFIC?

A. No. First, there has to be a distinction—of the kind drawn by the FCC—between a local voice call and a call to an Internet site. Unlike the voice call, the Internet call does not terminate within the CLEC's network but, rather, continues on through the Internet backbone to its ultimate destination. Therefore, when viewed from end to end, an Internet call—which treats the ISP as a point of passage into the Internet's packet-switched world—is essentially quite different in many aspects than a voice call, even if it is similar in others.

Second, the implicit premise of the question itself is incorrect because it ignores cost causation. There are cost-causative differences between Internet-bound traffic and ordinary local traffic despite a superficial functional resemblance between *parts of* the two types of traffic. From an economic perspective, the ILEC-CLEC model of inter-carrier compensation does not apply to Internet-bound traffic, and reciprocal compensation between local exchange co-carriers is not an efficient method of recovering costs. Moreover, any observation that Internet-bound traffic and local traffic use the same network elements is fundamentally a red herring. Technical characteristics of production or the level of cost may be items of interest in themselves, but they are entirely irrelevant for determining who should be made to pay for the cost. Even if the two types of traffic were functionally identical—which they are not—and generated the same level of cost, it would still be economically inappropriate to apply reciprocal compensation to both.

Third, if the cost *per minute* to terminate a local voice call were truly the same as that cost an Internet-bound call imposes on a CLEC, then the adverse economic effects of reciprocal compensation would not be as severe, although reciprocal compensation for that call would remain unjustified. However, the costs per minute for the two types of calls are *not* likely to be the same because of significant differences between them in average call durations, time-of-day load distributions, and the effects of one-to-one concentration at the switch that serves the ISP.

Q. WOULD THIS FORM OF COMPENSATION DENY A CLEC FAIR PAYMENT FOR USE OF ITS NETWORK BY AN INTERNET-BOUND CALL FROM A QWEST SUBSCRIBER?

A. Absolutely not. The point at issue here is whether it should be up to *Qwest* (the ILEC) to compensate the CLEC for the cost the latter incurs in carrying Internet calls to ISPs it serves. While the CLEC is entitled to recover fully the cost it incurs for Internet-bound calls, such recovery (compensation) ought to come—in accordance with cost causation—from the ISP or ISPs it serves, not from Qwest.

To have it otherwise—particularly in current circumstances in which CLECs are believed to share reciprocal compensation revenues with the ISPs they serve—would only reinforce the perverse incentive to specialize in providing "termination" services for ISPs (to the exclusion of virtually all other local exchange services) or to generate as much traffic as possible from Qwest's subscribers to ISPs with which those CLECs are allied.[16]

Q. IN THE ABSENCE OF FCC ACTION TO ESTABLISH INTER-CARRIER COMPENSATION RULES, HOW HAVE THE INDIVIDUAL STATES ACTED?

A. For a period of time until the FCC's *Internet Traffic Order* was issued in early 1999, a number of states pursued their own rulemaking on the issue. Those states chose to adopt the ILEC-CLEC local interconnection view of the world and required that the originating ILEC pay reciprocal compensation to terminating CLECs for Internet-bound calls just as they would for local voice calls. After the FCC's *Internet Traffic Order* was issued, regulators in Massachusetts, who had previously also adopted the local interconnection view, reversed themselves and declared the unqualified payment of reciprocal compensation for Internet-bound traffic to be

[16] Both the Massachusetts DTE (*Massachusetts ISP Compensation Order*, Section IV and fn. 39) and the FCC (*Internet Traffic Order*, ¶24, fn. 78) took note of—and expressed concern at—that development. Both noted, in particular, the web site claims of ISG-Telecom Consultants International, a Florida-based company formed in the aftermath of the Telecommunications Act of 1996 ("1996 Act"), that promises to turn ISPs into CLECs and IXCs with their own ISP operations. As a rationale for doing so, ISG-Telecom believes that "... as a facility based CLEC, the ISP/CLEC should be able to participate in *reciprocal compensation* with the carriers, providing there is not a negative ruling from the FCC in up and coming months." (emphasis added in part) Clearly, arbitrage opportunities presented by the payment of reciprocal compensation for Internet-bound traffic, not an inherently efficient network arrangement, lies at the heart of this mission statement.

antithetical to real competition in telecommunications.[17] Subsequently, regulators in New Jersey, in reversing an arbitrator's recommendation in October 1998, also ordered that reciprocal compensation not be paid for Internet-bound traffic.[18] Regulators in South Carolina[19] and Louisiana,[20] too, have directed that such compensation not be paid. Recently, Massachusetts regulators dismissed petitions by several CLECs for a reconsideration of their May 1999 ruling against reciprocal compensation for Internet-bound traffic and called on the parties to negotiate alternative compensation mechanisms for such traffic.[21] More recently, the Colorado Commission explicitly adopted the ILEC-IXC interconnection model for Internet-bound traffic in support of its decision opposing the payment of reciprocal

[17] Massachusetts Department of Telecommunications and Energy ("DTE"), *Complaint of MCI WorldCom, Inc., Against New England Telephone and Telegraph Company d/b/a Bell Atlantic-Massachusetts for Breach of Interconnection Terms Entered Into Under Sections 251 and 252 of the Telecommunications Act of 1996*, Docket No. 97-116-C, Order ("*Massachusetts ISP Compensation Order*"), May 1999. The DTE ordered that all future reciprocal compensation payments by Bell Atlantic be placed in an escrow fund until final disposition on the matter of inter-carrier compensation. The CLECs serving ISPs in Massachusetts currently do not themselves receive any compensation for Internet-bound traffic.

[18] New Jersey Board of Public Utilities, *In the Matter of the Petition of Global Naps, Inc. for Arbitration of Interconnection Rates, Terms, Conditions and Related Arrangements with Bell Atlantic-New Jersey Pursuant to Section 252(b) of the Telecommunications Act of 1996*, Docket No. T098070426, Order, July 7, 1999.

[19] South Carolina Public Service Commission, *In re Petition for Arbitration of ITC^DeltaCom Communications, Inc. With BellSouth Telecommunications, Inc. Pursuant to the Telecommunications Act of 1996*, Docket No. 1999-259-C, Order No. 1999-690, Order on Arbitration, October 4, 1999.

[20] *Louisiana ISP Compensation Order.*

[21] "Mass. 'Recip Comp' Order Brings GNAPs, Bell Atlantic Back to FCC," *Telecommunications Reports*, March 6, 2000, at 30.

compensation for Internet-bound traffic.[22] This Commission followed suit by opting for bill-and-keep over reciprocal compensation.[23]

Q. DID ANY OF THE STATE COMMISSIONS BASE ITS REJECTION OF RECIPROCAL COMPENSATION FOR INTERNET-BOUND TRAFFIC ON THE TYPE OF ECONOMIC ANALYSIS YOU HAVE PROVIDED?

A. Yes. Massachusetts regulators were first to recognize the perverse incentives of reciprocal compensation for Internet-bound traffic (an issue I return to later). The Colorado Commission relied more directly on the economic analysis I have outlined.

> The Commission finds that U S WEST's analogy is the more reasonable....The ILEC-IXC analogy suggests that the ISP should compensate both U S WEST and Sprint for the costs they incur in transmitting this call. Even if that analogy were not employed, applying the principle of cost causation would lead to the same conclusion, namely that the ISP should pay access charges to both U S WEST and Sprint for the cost caused by the customer....
>
> While ISP calls appear to be interstate in nature, our conclusion is not necessarily based upon that determination. Even if this traffic were considered to be local in nature, the Commission still would not embrace reciprocal compensation with a positive rate. Such a scheme would, in our view, bestow upon Sprint an unwarranted property right, the exercise of which would result in decidedly one-sided compensation. In addition, we find that reciprocal compensation would introduce a series of unwanted distortions into the market. These include: (1) cross-subsidization of CLECs, ISPs, and Internet users by the ILEC's customers who do not use the Internet; (2) excessive use of the Internet; (3) excessive entry into the market by CLECs specializing in ISP traffic mainly for the purpose of receiving compensation from the ILECs; and (4) disincentives for CLECs to offer either residential service or advanced

[22] See fn. 7, *supra*.

[23] See fn. 6, *supra*.

services themselves. In short, we agree with U S WEST that reciprocal compensation for ISP traffic would not improve overall social welfare; it would simply promote the welfare of some at the expense of others.[24]

C. The Cost of Internet-Bound Traffic

Q. ARE THE FACILITIES USED TO TRANSPORT AND SWITCH AN INTERNET-BOUND CALL SIMILAR TO THOSE USED TO TRANSPORT AND SWITCH OTHER TYPES OF CALLS?

A. The costs for transporting and switching traffic are not determined by *what* network elements are used—they are determined by *how* the network elements are used. Therefore, while the facilities used to transport and switch an Internet-bound call are similar to those used to transport and switch other types of calls, there are characteristics of Internet-bound traffic that make the *cost* of transport and switching (as measured by TELRIC) different for Internet-bound calls. The major differences are:

- *Call Duration*: Because Internet-bound calls are much longer, on average, than local voice calls, the per-minute cost of call setup is much lower for the Internet-bound call than for the average voice call.
- *Call Direction*: Transport and termination costs involve only terminating traffic. Some features and functions impose capacity costs only at the originating end and would not be included in a study of cost to Sprint of delivering Internet-bound traffic to ISPs.
- *Use of Network Elements*: Because dedicated circuits are used for Internet-bound traffic, traffic-sensitive switching costs are lower for Internet-bound traffic than they are for voice traffic.
- *Load Distribution*: The proportion of Internet-bound traffic that arrives at the busy hour of the switch may differ from that of ordinary voice traffic. If the load

[24] *Colorado ISP Order*, ¶C(j).

distribution of Internet-bound traffic is flatter than that of voice traffic and peaks at a different hour, then the average incremental minute of Internet-bound traffic would cause a smaller increase in the capacity requirements of the switch than an incremental minute of voice traffic.

Thus, even though similar facilities are used to switch and transport Internet-bound and voice traffic, the TELRIC of Internet-bound traffic can differ significantly from the TELRIC of average local exchange traffic, which currently determines the reciprocal compensation rate for local voice traffic.

Q. PLEASE EXPLAIN THE IMPACT OF CALL DURATION ON COSTS.

A. For every call, there are broadly two types of cost: a *fixed* cost (invariant to the length of the call) for call setup at both ends of the call, and an incremental or *variable* cost that arises for every minute a call passes through a switch. The full *per minute* cost of that call is the sum of the variable cost of that minute plus the fixed cost averaged over the total length of the call. The latter component would obviously diminish as the fixed cost is averaged over an increasing number of minutes. Thus, if the average Internet-bound call is about five to thirteen times longer than the average voice call,[25] the *average* fixed cost component for the former would be considerably smaller than that for the latter. *Even if* the variable cost component of both types of calls were the same, the *per minute* cost of the average Internet-bound call would still end up being considerably less than that for the average voice call. A simple numerical example illustrates this fact.

[25] See, e.g., Susan Biagi, "A Tale of Two Networks," *Telephony*, August 3, 1998.

Suppose the variable cost for each minute is 0.5¢ (for ease of exposition, it is assumed to be constant for all minutes). Then, a 3-minute call would have a total variable cost of 3×0.5 = 1.5¢ and a 20-minute call would have a total variable cost of 20×0.5 = 10¢. Suppose the fixed cost of call setup—which does not vary with the length of the call—is 2¢. Then the *total* cost of the 3-minute call (inclusive of call setup) would be 1.5+2 = 3.5¢, and that for the 20-minute call would be 10+2 = 12¢. To figure what each call costs on a per-minute basis, simply divide the total cost of each by the respective number of minutes. Thus, the 3-minute call would cost 3.5÷3 = 1.17¢ per minute and the 20-minute call would cost 12÷20 = 0.6¢ per minute. That is, as the call duration increases, the cost per minute would fall.

Q. PLEASE EXPLAIN HOW THE LOAD DISTRIBUTION OF TRAFFIC AFFECTS COSTS.

A. The cost drivers for transmitting or terminating any type of traffic (e.g., Internet-bound traffic, local traffic, toll) include the number and duration of calls in the busy hour. Incoming call attempts during the busy hour for the CLEC switch determine the capacity requirements for the switch components involved in call setup, namely, the central and peripheral processors and measurement equipment. Call duration during the busy hour determines the capacity requirements for the line and trunk equipment in the switch that are used to set up a path for the call.

It is likely that the load distribution of ISP traffic—number and duration of calls in the busy hour as a percent of total traffic—differs from that for other types of calls. The peak hour for voice traffic normally occurs some time during the business day. Internet-bound traffic is likely to have a flatter load distribution due to the nature of demand. Whereas the business day is confined approximately to an eight hour period with little evening or weekend activity, consumers frequently use the Internet during the evening and weekends. These usage patterns flatten the load distribution for ISP traffic, in the sense that the fraction of usage falling in the busy hour is smaller for Internet-bound traffic than for ordinary voice traffic. This means that Internet-bound traffic requires less investment and costs per minute to provide capacity to meet peak demand than does ordinary voice traffic.

Q. PLEASE EXPLAIN HOW THE USE OF NETWORK ELEMENTS AFFECTS TRANSPORT AND SWITCHING COSTS DIFFERENTLY FOR INTERNET-BOUND TRAFFIC THAN FOR LOCAL VOICE TRAFFIC.

A. The cost analyst must examine not only *which* network elements are used to provide a service, but also *how* they are used. Rates set for inter-carrier compensation of any type of traffic must recover only the costs that are traffic-sensitive, i.e., vary with additional usage. Non-traffic sensitive costs, i.e., costs that do not vary with additional usage, *should not be so recovered.* This follows as a matter of general economic principle and as a requirement of the Telecommunications Act of 1996 which states in Section 252(d)(2) that prices for the "transmission and routing of telephone exchange service and exchange access" be based on incremental costs.

It is important to consider how network elements are used for different types of traffic because differences in such use can affect not only the level of costs but, more importantly, the manner in which the costs should be recovered. The same network element that may appear to be a shared facility in certain uses can turn out to be a dedicated facility in other uses. In the former case, the cost of the facility would be recovered from all customers using that facility and, in the latter case, it would be recovered from the single cost-causing customer.

Q. PLEASE ELABORATE UPON THIS POINT.

A. An examination of the typical line-to-trunk concentration ratio for different types of traffic shows why it is incorrect to conclude that the costs for different types of traffic are the same merely because identical network elements are used. An important part of switch investment costs is the busy hour line CCS (hundred call seconds) costs. Busy hour line CCS is a measure of the type of concentration required on the line side of the switch and is determined by the number of line circuits sharing a trunk circuit and a circuit path through the switch processor. A concentration ratio of 8:1, for example, means that eight line circuits share one trunk circuit and one circuit path through the switch processor.[26] Using basic engineering guidelines, the switch is sized and engineered, i.e., a concentration ratio is determined, to accommodate a certain level of traffic so that a minimum level of blocking occurs if traffic volume during the busy hour is higher than the volume suggested by the concentration ratio that is chosen. For traditional voice

[26] An ordinary voice loop is generally engineered for 3 CCS at the busy hour, while the interoffice trunks that concentrate those loops are engineered for about 27 busy hour CCS. Thus, for ordinary voice traffic, it is not unusual to observe 8 or 9 loops for every trunk.

traffic, busy hour line CCS costs are traffic-sensitive in nature because they arise from a shared facility. namely, one circuit path through the switch processor that is shared by eight customer lines. Because of that sharing, the use of the facility during the peak hour imposes congestion costs on other users in the form of rationing or call-blocking. Since line CCS costs arise from a resource that is shared by various users, a recovery mechanism that apportions cost to those cost-causing users provides proper signals at the margin and increases economic efficiency.

Line CCS costs for Internet-bound traffic, however, are not traffic-sensitive. CLECs which focus on Internet traffic rely on ISDN Primary Rate Interfaces ("PRI") to serve ISPs and build switches at a concentration ratio of 1:1. For those carriers, line CCS costs are fixed with respect to usage. Each line serving an ISP has a *dedicated* path through the switch processor and increased usage from other lines does not impact the use of the line serving the ISP. No matter what the demand is from other lines, the path serving the ISP will always be available for customers calling the Internet. Since the circuit is dedicated to the ISP line, the use of the facility does not impose congestion costs on other users and no rationing or call blocking is imposed on the network as a result. Although the same network elements are used for local voice traffic, inter-carrier compensation for Internet-bound traffic should not include line CCS costs because those costs do not vary with additional usage and are, therefore, not incremental costs of delivering Internet-bound calls.

D. Reciprocal Compensation for Internet-Bound Traffic Harms Economic Efficiency and Distorts Local Exchange Competition

Q. WHY WOULD THE ILEC-CLEC LOCAL INTERCONNECTION REGIME WITH PAYMENT OF RECIPROCAL COMPENSATION FOR INTERNET-BOUND TRAFFIC HARM ECONOMIC EFFICIENCY AND FAIL TO PROMOTE TRUE COMPETITION?

A. The harm to economic efficiency in an ILEC-CLEC local interconnection regime with payment of reciprocal compensation for Internet-bound traffic occurs for three reasons:

1. Inefficient subsidization of Internet users by non-users.
2. Distortion of the local exchange market.
3. Creation of perverse incentives to arbitrage the system at the expense of basic exchange ratepayers.

1. Inefficient Subsidization

Q. PLEASE EXPLAIN HOW THE ILEC-CLEC INTERCONNECTION REGIME FOR INTERNET-BOUND TRAFFIC COULD CAUSE INEFFICIENT SUBSIDIZATION OF INTERNET USERS BY NON-USERS.

A. The principle of cost causation requires that the *ISP customer* pay at least the cost his call imposes on the circuit-switched network.[27] Suppose inter-carrier compensation for Internet-bound traffic is treated as in the ILEC-CLEC interconnection regime. This regime assumes at the outset that the customer

[27] It is assumed that the cost imposed by that customer for the packet-switched network portion of the Internet call is recovered through monthly access charges by the ISP serving that customer.

initiating the call has paid the originating ILEC for the end-to-end carriage of the call, typically, the per-call equivalent of the local call charge. Out of what it receives, the ILEC then pays reciprocal compensation to the CLEC that carries the Internet call to the ISP. This compensation is a per-minute call "termination" charge which, ideally, should reflect the incremental cost that the ILEC *avoids* by not having to deliver the call itself. In this scenario, problems can emerge from two sources.

First, if the local call charge is itself not compensatory, i.e., below the incremental cost of carrying a local voice call from end to end, then it cannot be sufficient to allow recovery of both the ILEC's incremental cost to originate the call and the CLEC's incremental cost to deliver the call. In other words, once reciprocal compensation has been paid, the ILEC would fail to recover its cost of carrying the Internet-bound call when the local call charge itself is non-compensatory or inefficient. If the ILEC still manages to break even for *all* of its services in these circumstances, that could only mean that Internet use (for which the cost exceeds revenue) must be being subsidized by non-Internet and, most likely, non-local exchange services. This scenario is likely to play out whenever, in order to promote universal service, the local residential call charge in a state is set below the incremental cost of that call.

Second, if the per-minute cost to deliver an Internet-bound call is *less* than the per-minute cost to terminate the average voice call (on which most reciprocal compensation arrangements are based), then the CLEC would actually earn revenue in excess of its cost. Even if the local per-call charge were compensatory, the ILEC could still end up with a higher cost liability than necessary or economically efficient (the sum of its own originating cost and the CLEC's inflated termination charge). If the CLEC could then funnel back some of the excessive compensation so received to the ISP or the Internet user through, e.g., lower monthly charges for Internet use, then the *net* price paid for the ISP call would be below the cost imposed on the originating ILEC.[28] This would be equivalent to receiving a subsidy.

This form of subsidization of Internet use within the circuit-switched network would stimulate demand for Internet services inefficiently and further aggravate the ILEC's tenuous position under the ILEC-CLEC interconnection regime. Additional negative consequences would be (1) greater congestion at local switches engineered for voice traffic generally and, as a result, poorer quality of voice traffic, and (2) CLECs making the opportunistic choice to specialize only in the delivery of Internet-bound traffic. I discuss the resulting distortion of the local exchange market below.

Q. WHEN INTERNET-BOUND TRAFFIC IS ALMOST ENTIRELY ONE-WAY (FROM QWEST'S SUBSCRIBERS TO ISPs SERVED BY CLECs), WHAT PRACTICAL EFFECT IS LIKELY FROM REQUIRING QWEST TO PAY RECIPROCAL COMPENSATION FOR SUCH TRAFFIC?

[28] See fn.16, *supra.*

A. One often overlooked practical effect of the continued requirement to pay reciprocal compensation despite such traffic imbalance[29] is the likely ultimate pressure on Qwest's prices for retail services, including residential local exchange service. Under current practice, Qwest is allowed to collect a flat monthly amount from each of its residential customers for local exchange service. In principle, this amount is supposed to compensate Qwest, on average, for the actual cost of providing that service to each customer. In the U.S., however, it is commonplace to encourage greater subscribership by setting the monthly (flat-rated) price of local exchange service to residential customers affordably low and frequently *below* the incremental cost to serve each customer. The revenue deficit which results from this is usually made up with implicit (i.e., price-based) subsidies from other services offered—often competitively—by the ILEC. To the extent that Qwest is not exempted from this practice, *any* addition to that incremental cost can only exacerbate the revenue deficit from local exchange service and compel Qwest to seek recovery by raising *further* its prices for retail services, including residential local exchange service.

The fact is that residential local exchange service prices were never set with the additional and, generally, large Internet traffic-related costs in view. Even if reciprocal compensation rates were properly set so that Qwest only paid the CLEC the cost it *actually* avoided to deliver traffic to ISPs, Qwest could never escape the

[29] Traffic is said to be "balanced" when originating and terminating volumes are similar.

growing spiral of network facilities-related costs it would have to incur in order to serve the ever-increasing volumes of one-way Internet-bound calls made possible by the perverse incentives presented to ISP-serving CLECs by reciprocal compensation revenues.[30] Faced with having to recover costs seriously in excess of revenues available from residential local exchange service, Qwest would have little choice but to petition this Commission for increases in the price of residential local exchange service in Arizona. Raising other retail service prices to effect such recovery may also be an option, but one fraught with two serious problems. First, as those other services become increasingly competitive in the market, raising their prices, rather than lowering them, will prove untenable and counter-productive for Qwest. Second, raising those other service prices will only continue, rather than mitigate, the current practice of relying on extensive implicit subsidies in the pricing of telecommunications services. The 1996 Act made it very clear that those implicit subsidies are to be removed as expeditiously as possible.

2. Market Distortions

Q. PLEASE EXPLAIN HOW THE PAYMENT OF RECIPROCAL COMPENSATION FOR INTERNET-BOUND TRAFFIC COULD CAUSE THE LOCAL EXCHANGE MARKET TO BE DISTORTED.

A. Under the ILEC-CLEC interconnection regime, the compensation paid to CLECs *for Internet-bound traffic* evidently exceeds their cost of delivering such traffic and

[30] I explain the perverse incentives issue in greater detail later in my testimony.

also exceeds whatever costs Qwest might save when CLECs deliver that traffic on its behalf. That such compensation for Internet-bound traffic does not reflect costs should not be surprising. In Arizona, compensation is based on Qwest's forward-looking total element long run incremental cost ("TELRIC") of terminating traffic averaged over a wide range of end-users, services, and service locations. This has important implications for setting compensation for *Internet-bound calls* on the same basis.

First, the per-minute *incremental* cost of terminating or delivering traffic to particular end-users can vary a great deal, depending upon their location and the characteristics of the traffic. Second, because of average call durations, the *full* per-minute cost of termination (inclusive of both incremental and fixed costs) for averaged voice traffic is typically higher than the full per-minute cost of delivering Internet-bound traffic.

When traffic between the ILEC and the CLEC is balanced, the accuracy of the estimated underlying cost of termination as the basis for reciprocal compensation is less material. Because the same compensation rate applies in both directions, any overpayment (or underpayment) by an ILEC to terminate traffic on the CLEC's network is offset by a corresponding overpayment (or underpayment) by the CLEC to terminate traffic on the ILEC's network. Thus, when traffic is balanced, no individual ILEC or CLEC is helped or handicapped in competing for retail customers in the local exchange market by the requirement that interconnection compensation be based on costs averaged over all customers.

However, when traffic between the ILEC and the CLEC is grossly unbalanced, e.g., when the CLEC terminates traffic from the ILEC but returns little or no traffic to it, the accuracy of the cost-based compensation becomes critical. Suppose, for simplicity, Qwest's own cost to deliver Internet traffic to an ISP that it serves is the same as the cost experienced by a specialized CLEC that serves a collocated ISP. That is, Qwest's own cost of carrying Internet-bound traffic is the same as the cost it avoids when a CLEC handles such traffic instead. If Qwest is then required to pay reciprocal compensation for Internet-bound traffic at an averaged cost-based rate that reflects *all* forms of local traffic, its total cost of local service would necessarily be higher than if compensation levels were properly tied to the *type*—hence, the cost—of traffic terminated. This cost increase would not be offset by a similar increase in revenue from handling the CLEC's Internet-bound traffic (because the CLEC does not originate any traffic). Thus, local exchange competition would be distorted by the inapplicability of the averaged cost-based compensation to ISP traffic; CLECs that primarily serve ISPs (and originate little or no traffic) would receive revenues in excess of cost while ILECs (or even other CLECs) that serve all types of customers would experience an increase in costs without a commensurate increase in revenues.

Q. DOES THAT MEAN THAT RECIPROCAL COMPENSATION IS ILL-ADVISED BECAUSE TRAFFIC BETWEEN THE ORIGINATING ILEC AND THE CLEC THAT DELIVERS ISP TRAFFIC IS UNBALANCED?

A. Yes, but the problem here is not simply that traffic is unbalanced. Reciprocal compensation was never envisioned as appropriate inter-carrier compensation for essentially one-way traffic. This is particularly true when the true cost to terminate for the carrier that only *receives* traffic is actually lower than the termination cost (experienced by the carrier that *sends* traffic) on which a symmetrical compensation arrangement is based. But, even with balanced traffic, requiring reciprocal compensation payments for Internet-bound calls would violate the economic principle of recovering cost in accordance with cost causation.

Q. WOULD RECIPROCAL COMPENSATION FOR INTERNET-BOUND TRAFFIC DISTORT LOCAL COMPETITION?

A. Yes, in two ways. First, since end-users that generate Internet-bound traffic would not pay the full incremental cost of carrying it, LECs would have an incentive to avoid competing to serve such customers. As most switched Internet-bound traffic comes from residential users, the incentives to compete to serve residential users would be artificially diminished. Second, the ISPs themselves are better off if their customers obtain their local telephone service not from the CLECs that deliver ISP-only traffic but from the ILEC or other CLECs that do not serve ISPs. Suppose, for example, the ILEC serves 95 percent of the residential local exchange traffic in a market. If an ISP obtained access service from the ILEC, only 5 percent of its traffic would generate reciprocal compensation payments. If it signed up with a CLEC, 95 percent of its traffic would generate such payments. When the reciprocal compensation price exceeds the CLEC's cost to handle the traffic, this imbalance gives it a strong financial incentive to seek access service from CLECs as opposed to ILECs. This creates a further distortion in the local exchange market, contrary to the vision of competition embodied in the 1996 Act.

It is not surprising, therefore, that the DTE in Massachusetts felt compelled to opine:

> We note also that *termination* of the obligation for reciprocal compensation payments for Internet-bound traffic (because that traffic is no longer deemed local) removes the incentive for CLECs to use their regulatory status "solely (or predominately)" to funnel traffic to ISPs.[31]

3. Arbitrage

Q. PLEASE EXPLAIN HOW RECIPROCAL COMPENSATION FOR INTERNET-BOUND TRAFFIC COULD CREATE PERVERSE INCENTIVES TO ARBITRAGE THE SYSTEM AT THE EXPENSE OF BASIC EXCHANGE RATEPAYERS.

A. Arbitrage is frequently a response to a market distortion. As the DTE in Massachusetts and the FCC have clearly recognized, unintended arbitrage opportunities can easily emerge when competition in the local exchange market is distorted by basing inter-carrier compensation for Internet-bound traffic on the ILEC-CLEC local interconnection regime. When the compensation available to the CLEC for delivering Internet-bound traffic exceeds its actual cost of delivering that traffic, the CLEC will have a strong incentive to deliver as much ISP traffic as possible. The desire to maximize profits can bring forth some very inventive schemes that take advantage of this discrepancy but which distort market

[31] *Massachusetts ISP Compensation Order.*

outcomes and reduce the efficiency of the telecommunications network. For example, the CLEC's profits would increase whenever a Qwest subscriber—or his computer—could be induced to call the ISP and remain on the line 24 hours a day.[32] Sensing this pure arbitrage profit opportunity, CLECs would also have a strong incentive—indeed, have as their *raison d'être*—to specialize in delivering Internet-bound traffic, to the exclusion of offering any other type of local exchange service. These "ISP-specializing" CLECs can—and do—form a three-way axis with a distortive ability and incentive to generate revenues from reciprocal compensation: (1) the CLECs themselves, (2) ISPs (served by those CLECs) which likely share those reciprocal compensation revenues—the spoils of this arrangement—in return for their loyalty and cooperation, and (3) ISP customers on the originating ILEC's network that generate the Internet-bound traffic.

Q. WHAT TYPES OF ARBITRAGE OCCUR IF THE INTER-CARRIER COMPENSATION RATE EXCEEDS THE LEC'S INCREMENTAL COST OF TRANSMITTING INTERNET-BOUND TRAFFIC?

A. In this circumstance, CLECs would have an incentive to create sham traffic solely for the purpose of collecting windfall inter-carrier compensation. That incentive distorts the marketing of its services towards customers who generate incoming

[32] Dedicated (private line) connections that bypass the public switched network are most efficient for customers desiring "always-on" or 24 hour connectivity. Despite this fact, such connectivity is sometimes offered in a manner that involves traffic origination through an ILEC's switch and termination through an ISP-serving CLEC's switch. This arrangement is clearly less interested in efficiency or the best use of valuable network resources than it is in generating the maximum possible revenue from reciprocal compensation.

traffic, but it also creates an incentive to carry as many minutes as possible to existing ISP customers. The CLEC might even offer to pay the ISP to connect to its network, in order to collect excessive inter-carrier compensation from the ILEC, which has no choice but to deliver its customers' calls to the CLEC—and pay the excessive compensation. Similarly, CLECs are encouraged to subsidize the ISPs' end user customers, encouraging them to maintain connections 24 hours a day, seven days a week. A case in North Carolina involving BellSouth and US LEC of North Carolina confirmed that perverse economic incentives can be created when the inter-carrier compensation rate exceed the CLEC's cost.[33] The North Carolina Commission found:

> US LEC deliberately created a usage imbalance between itself and BellSouth by terminating a greater amount of traffic originating on BellSouth's network than it would be terminating to BellSouth. In furtherance of its plan to create a traffic imbalance and thus large reciprocal compensation revenues for itself, US LEC, among other things, induced MCNC and Metacomm to originate connections on BellSouth's network and terminate them to US LEC telephone numbers by agreeing to pay them 40% of all reciprocal compensation BellSouth paid US LEC for minutes of use for which they were responsible.[34]

And,

> In the fall of 1997, Metacomm and MCNC established networks to generate reciprocal compensation for US LEC and commissions for themselves. They established connections by having routers connected to circuits purchased from BellSouth call routers connected to circuits provided by US LEC. They leased transmission facilities from BellSouth capable of originating up to 672 connections simultaneously. Pursuant to US LEC's instructions, Metacomm and MCNC programmed their

[33] *In the Matter of BellSouth Telecommunications Inc v. US LEC of North Carolina Inc*, Before the North Carolina Utilities Commission, Docket No P-561, SUB 10, March 31, 2000.

[34] *Id.*, at 7.

> routers to disconnect and immediately reconnect each connection every 23 hours and 59 minutes, so that US LEC's switches could create the records US LEC which [sic] needed to bill BellSouth for reciprocal compensation.[35]

This type of behavior also artificially discourages the deployment and use of new broadband technologies (e.g., cable or DSL connections) because such direct connections are not eligible for inter-carrier compensation.

Q. WOULD THIS BE TRUE OF A CLEC WHICH, UNLIKE ISP-SPECIALIZING CLECs, IS A LARGE FACILITIES-BASED PROVIDER OF LOCAL EXCHANGE SERVICES?

A. Yes. All CLECs face these distorted incentives irrespective of the mix of traffic they actually serve. Whether a CLEC passes through a portion of the reciprocal compensation payments it receives to attract ISP customers is irrelevant, because competition among CLECs to serve ISPs will ensure that reciprocal compensation payments in excess of cost will be passed through to ISPs in the form of lower market prices for the network access they buy from CLECs.

Q. HAVE REGULATORS TAKEN EXPLICIT NOTE OF THE FACT THAT THESE ARBITRAGE OPPORTUNITIES ARISE BECAUSE COMPENSATION RATES ARE OUT OF LINE WITH TERMINATION COSTS?

[35] *Id.* It should be noted that MCNC withdrew its participation in the reciprocal compensation arrangement after its management learned that the "unusual configuration and mix of equipment" making up the network was intended to generate revenue from connections without regard to actual traffic or content traversing the connections.

A. Yes. Where the cost of terminating traffic to a particular type of customer differs greatly from the average, the FCC has recognized the possibility of arbitrage and has declined to use the ILEC's TELRIC of termination as a proxy for those of the CLEC:

> Using incumbent LEC's costs for termination of traffic as a proxy for paging providers' costs, when the LECs' costs are likely higher than paging providers' costs, might create uneconomic incentives for paging providers to generate traffic simply in order to receive termination compensation.[36]

Instead, the FCC has required separate cost studies to justify a cost-based termination rate which the FCC explicitly expects would be lower than the wireline ILECs' TELRIC-based rate. Note that the paging case also involves one-way calling; like ISPs, paging companies do not originate traffic.

More recently, the FCC has acknowledged that:

> efficient rates for inter-carrier compensation for Internet-bound traffic are not likely to be based entirely on minute-of-use pricing structures. In particular, pure minute-of-use pricing structures are not likely to reflect accurately how costs are incurred for delivering Internet-bound traffic.[37]

This is clear recognition of the fact that TELRIC-based rates, such as those developed in Arizona, are fundamentally unsound for inter-carrier compensation for Internet-bound traffic. Echoing the FCC's sentiment, the Massachusetts DTE has stated flatly that:

> The revenues generated by reciprocal compensation for ... incoming traffic are most likely in excess of the cost of sending such traffic to ISPs.

[36] FCC, *In the Matter of Local Competition Provisions in the Telecommunications Act of 1996*, CC Docket No. 96-98, First Report and Order ("*Local Competition Order*"), released August 19, 1996, at ¶1093.

[37] *Internet Traffic Order*, ¶29.

> ... Not surprisingly, ISPs view themselves as beneficiaries of this "competition" and argue fervently in favor of maintaining reciprocal compensation for Internet-bound traffic. However, the benefits gained, through this regulatory distortion, by CLECs, ISPs, and their customers do not make society as a whole better off, because they come artificially at the expense of others.[38]

E. Conclusions About Inter-Carrier Compensation for Internet-Bound Traffic

Q. WHAT DO YOU CONCLUDE IN LIGHT OF THESE ACKNOWLEDGEMENTS?

A. It is reasonable to expect that a fairer system of inter-carrier compensation may yet be more widely adopted for all forms of one-way traffic. The ILEC-IXC interconnection regime offers one such alternative. More importantly, under that alternative:

1. perverse incentives and unintended arbitrage opportunities are removed,
2. cost causation guides cost recovery (including the payment of access-like charges by ISPs to ILECs and CLECs that handle their traffic),
3. more efficient use is made of network resources,
4. inefficient entry for the sake of earning opportunistic arbitrage profits is prevented, and
5. true competition (undistorted by the gain from specializing in terminating one-way traffic) can be realized in the local exchange market.

Of course, this interconnection regime would call for access-like usage-based charges to be paid for Internet-bound traffic.

Q. HOW COULD THE PAYMENT OF ACCESS-LIKE CHARGES SOLVE THE PROBLEM OF INEFFICIENT SUBSIDIZATION?

[38] *Massachusetts ISP Compensation Order.* Emphasis added.

A. In the ILEC-IXC regime, the ISP customer is held responsible for causing and, therefore, paying all of the origination, transport, and switching costs of an Internet call. Full cost recovery from the cost source would eliminate any possibility of inefficient subsidization.

Q. HOW DOES THE FCC'S ESP EXEMPTION FROM ACCESS CHARGES CHANGE THIS CONCLUSION?

A. The FCC's ESP exemption leaves the ISP the beneficiary of a subsidy funded partially by the ILEC and the CLEC that jointly supply access services to the ISP. Because of that exemption, the ILEC and the CLEC would never actually be fully compensated for the costs they incur on Internet-bound calls. However, within this framework, that ILEC and CLEC could each still only be asked to contribute to the ISP access subsidy no more than the same proportion of their respective costs.

Q. PLEASE DESCRIBE THIS ALTERNATIVE COMPENSATION MECHANISM.

A. The ISP would still be held responsible for compensating the ILEC and the CLEC. Because of the access charge exemption, the second-best inter-carrier compensation mechanism would be for the ILEC and the CLEC to share the exchange access or PRI revenues received by the CLEC from the ISP that it serves. They would each share those revenues in the same proportions as their costs, although it is possible that neither would be fully compensated. This arrangement would be competitively-neutral, however, because the ILEC and the CLEC would both have to contribute to the subsidy rather than just the ILEC that originates the Internet-bound call. In this regime, the ISP would have no particular incentive to become a CLEC itself, nor would the competition among the ILEC and the CLEC to serve the ISP be distorted by incentives to seek compensation for delivering calls.

Q. IS BILL-AND-KEEP AN APPROPRIATE COMPENSATION MECHANISM FOR INTERNET-BOUND TRAFFIC?

A. It is the third-best alternative. Bill-and-keep amounts to payment of reciprocal compensation at a zero rate. It is, therefore, not a fully cost-causative form of compensation. However, it is also not necessarily as distortive as a reciprocal compensation at a positive rate, with the rate set on the basis of the ILEC's cost to terminate *local voice calls*. Bill-and-keep also requires the ILEC and the CLEC to participate in the subsidization of Internet access and the ISP. In fact, the subsidy burden is greater than under the second-best case in which revenues earned from the ISP are shared equitably by the ILEC and the CLEC.

Q. IN CONCLUSION, IS COST CAUSATION-BASED COMPENSATION THE ONLY FORM OF INTER-CARRIER COMPENSATION FOR INTERNET-BOUND CALLS THAT THE COMMISSION SHOULD CONSIDER?

A. Yes. From the economic standpoint, any method of inter-carrier compensation for Internet-bound calls should be based on cost causation. Ideally, access-like usage-based charges should be paid by the ISP to the ILEC and the CLEC that transport and switch Internet calls to it. However, because of the FCC's current ESP exemption, the next-best cost-causative form of compensation would be an equitable sharing (between the ILEC and the CLEC) of revenues earned by the CLEC from the lines it sells to the ISP. This form of revenue sharing may not be sufficient for the ILEC and CLEC that jointly provide access service to fully recover their costs, but the degree to which they under-recover those costs (or, equivalently, subsidize Internet service) would be in the same proportion as their respective costs and, hence, competitively-neutral. The third-best and reasonable interim form of compensation would be bill-and-keep or, in effect, exchange of Internet-bound traffic between the ILEC and the CLEC at no charge to each other. In my opinion, because it is not based on cost causation, reciprocal compensation at a positive rate should not be an option at all.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

BEFORE THE ARIZONA CORPORATION COMMISSION

CARL J. KUNASEK
CHAIRMAN
JIM IRVIN
COMMISSIONER
WILLIAM A. MUNDELL
COMMISSIONER

IN THE MATTER OF INVESTIGATION	)	
INTO QWEST CORPORATION'S	)	
COMPLIANCE WITH CERTAIN	)	**DOCKET NO. T-00000A-00-0194**
WHOLESALE PRICING REQUIREMENTS	)	
FOR UNBUNDLED NETWORK ELEMENTS	)	
AND RESALE DISCOUNTS	)	

EXHIBIT OF

WILLIAM E. TAYLOR, Ph.D.

SENIOR VICE PRESIDENT
NATIONAL ECONOMIC RESEARCH ASSOCIATES, INC.

ON BEHALF OF

QWEST CORPORATION

October 11, 2000

n/e/r/a
Consulting Economists

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EXHIBIT WET-1

WILLIAM E. TAYLOR: CURRICULUM VITAE

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Dr. Taylor received a B.A. magna cum laude in Economics from Harvard College, an M.A. in Statistics and a Ph.D. in Economics from the University of California at Berkeley. He has taught economics, statistics, and econometrics at Cornell and the Massachusetts Institute of Technology and was a post doctoral Research Fellow at the Center for Operations Research and Econometrics at the University of Louvain, Belgium.

At NERA, Dr. Taylor is a Senior Vice President, heads the Cambridge office and is Director of the Telecommunications Practice. He has worked primarily in the field of telecommunications economics on problems of state and federal regulatory reform, competition policy, terms and conditions for competitive parity in local competition, quantitative analysis of state and federal price cap and incentive regulation proposals, and antitrust problems in telecommunications markets. He has testified on telecommunications economics before numerous state regulatory authorities, the Federal Communications Commission, the Canadian Radio-television and Telecommunications Commission, federal and state congressional committees and courts. Recently, he was chosen by the Mexican Federal Telecommunications Commission and Telmex to arbitrate the renewal of the Telmex price cap plan in Mexico. Other recent work includes studies of the competitive effects of major mergers among telecommunications firms and analyses of vertical integration and interconnection of telecommunications networks. He has appeared as a telecommunications commentator on PBS Radio and on The News Hour with Jim Lehrer.

He has published extensively in the areas of telecommunications policy related to access and in theoretical and applied econometrics. His articles have appeared in numerous telecommunications industry publications as well as *Econometrica*, the *American Economic Review*, the International *Economic Review*, the *Journal of Econometrics*, *Econometric Reviews*, the *Antitrust Law Journal*, *The Review of Industrial Organization*, and *The Encyclopedia of Statistical Sciences*. He has served as a referee for these journals (and others) and the National Science Foundation and has served as an Associate Editor of the *Journal of Econometrics.*

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NATIONAL ECONOMIC RESEARCH ASSOCIATES, INC. (NERA)
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BELL COMMUNICATIONS RESEARCH, INC. (Bellcore)
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1972-1975 Assistant Professor, Department of Economics. (On leave 1974-1975.) Taught graduate and undergraduate courses on econometrics, microeconomic theory and principles.

MISCELLANEOUS

1985-1995 Associate Editor, *Journal of Econometrics*, North-Holland Publishing Company.
1990- Board of Directors, National Economic Research Associates, Inc.
1995- Board of Trustees, Treasurer, Episcopal Divinity School, Cambridge, Massachusetts.

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October, 2000

BEFORE THE ARIZONA CORPORATION COMMISSION

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS	)	**DOCKET NO. T-00000A-00-0194** **AFFIDAVIT OF WILLIAM E. TAYLOR**
STATE OF MASSACHUSETTS	)	
COUNTY OF MIDDLESEX	)	

William E. Taylor, of lawful age being first duly sworn, depose and states:

1. My name is William E. Taylor. I am Senior Vice President at National Economic Research Associates, Inc. in Cambridge, Massachusetts. I have caused to be filed written testimony and exhibits in support of Qwest Corporation in Docket No. T-00000A-00-0194.

2. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge and belief.

Further affiant sayeth not.

William E. Taylor
William E. Taylor

SUBSCRIBED AND SWORN to before me this 6th day of October, 2000.

Andrea J. A. Demino
Notary Public residing at Cambridge, Massachusetts.

My Commission Expires: 9/24/04